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Table of Contents

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ORIGINAL ARTICLES

- LATE RESULTS OF OPERATIONS FOR CORRECTION OF FOOT DEFORMITIES RESULTING FROM POLIOMYELITIS. *By Herman W. Marshall, M.D., Boston, and Robert B. Osgood, M.D., Boston* 375
- THE CANNIBALISM AND HERIVOROUS TYPES IN MAN: THE POSSIBILITY AND UTILITY OF THEIR RECOGNITION. II. CERTAIN GENERAL CONSIDERATIONS. *By John Brown, M.D., Boston* 384
- PSYCHOGENIC ARTERIITIS WITH REPORT OF SIX CASES. *By James Warren Sever, M.D., Boston* 387

CLINICAL DEPARTMENT

- A PRELIMINARY REPORT OF THE RESULTS OF WASSERMANN TESTS AS REPORTED FROM DIFFERENT LABORATORIES, CALLING ATTENTION TO A LITTLE NOB OR THE FREEM OF THE UPPER LIP, WHICH MAY OR MAY NOT BE CHARACTERISTIC OF SYPHILIS. *By G. D. Phelps, M.D., Worcester, Mass.* 391
- THE FEMUR OF AN IDIOPATHIC EPILEPTIC. *By J. S. Foote, M.D., Omaha, Nebraska* 392

REPORTS OF SOCIETIES

- TRANSACTIONS OF THE THIRTEENTH ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN PHYSICIANS: HELD AT WASHINGTON, D. C., MAY 11, 12 AND 13, 1915. (Concluded.) 392

BOOK REVIEWS

- Encyclopedia Medica. Editor, J. W. Ballantyne, M.D. 397

EDITORIALS

- EDUCATION AND EUGENICS 398
- TUBERCULOSIS CONFERENCES 399
- PHYSICAL TYPES AND PROFESSIONAL EFFICIENCY 400
- THE DE-NARCOTIZATION OF TOBACCO 401
- MEDICAL NOTES 402

CORRESPONDENCE

- BRIEF IS THE MEMORY OF EARTH. "S." 410
- AMERICAN RED CROSS IN SERBIA. G. C. S. 411
- A NAUTICAL REMEDY FOR HICCUGH. F. C. Shattuck, M.D. 412

MISCELLANY

- HEALTH TEMPLES IN ANCIENT GREECE 406
- THE HISTORY OF BLOOD-LETTING 408
- BELGIAN PHYSICIANS' RELIEF FUND 412
- NOTICES, APPOINTMENTS, RECENT DEATHS, ETC. 412

Original Articles.

LATE RESULTS OF OPERATIONS FOR CORRECTION OF FOOT DEFORMITIES RESULTING FROM POLIOMYELITIS.

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AND

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TWENTY-SIX cases were selected for this study from among many patients treated at the Massachusetts General Hospital. All simple tenotomies of the tendo Achillis for equinus deformity, all plantar fasciotomies for slight contractions of the feet, all recent cases of all sorts were discarded and only the more complex ones of longer duration retained. All patients within this restricted class, however, that came back for final observation are included, both good and bad results. The number of cases is small because the orthopaedic ward of the hospital was not opened until November, 1907, and only a few years of patients' admissions, therefore, are available. The average length of time that has elapsed since operative interference among the twenty-six cases reported is four years and ten months; and it is interesting to note how widely the older patients have scattered, in this particular series scarcely a half of them being able to return for observation.

The cases show the results of seven astragaleotomies, six arthrodeses of ankle joints, numerous tendon transplantations, arthrodeses of small joints of the feet, tenotomies, fasciotomies and osteotomies, but it is to be regretted that there are included none of the tendon fixations recently advocated by Gallie.

Group statistics will be presented first, followed by individual histories, and finally a few brief conclusions will be drawn. In detail the varieties of surgical procedures were as follows, and their different combinations will be seen in the individual records of patients.

Five cases of tendo Achillis lengthening or tenotomy.

Five cases of plantar fasciotomy.

Seven cases of tibialis anticus tendon transplantation for varus deformity.

One case of tibialis posticus tendon transplantation for previously over-corrected valgus deformity.

One case of tibialis posticus tendon transplantation into a weakened tendo Achillis.

Five cases of peroneal tendon transplantation for valgus deformity.

Five cases of peroneal tendon transplantation into weakened tendo Achillis.

Six cases of extensor longus hallucis tendon transplantation laterally into head of first metatarsal bone for hyperextension and flexion of the great toe.

Two cases of arthrodesis of the first phalangeal joint of the great toe associated with transplantation of extensor longus hallucis tendon.

Nine cases of arthrodesis of smaller joints in connection with tendon transplantation, e.g. cal-

caneo-cuboid joint, five instances; astragalo-scapoid joint, four instances.

Five cases of osteotomy, *e.g.* of calcis, two instances; astragalus, two instances; external cuneiform bone, one instance.

One case of insertion of a silk ligament from the tibia to the tarsus for valgus deformity.

There were four examples of calcaneus deformity, five of marked equinus, ten of decided varus, and twelve of valgus defects.

Four calcaneo-valgus deformities ended as follows: (1) A poor functional result from increased instability of the foot following transverse osteotomy of the os calcis and transplantation of peroneal tendons into the tendo Achillis. There was partial correction, however, of the anatomic defect. (2) Slight functional improvement from an astragalectomy, but the patient was obliged to wear a long leg brace because of knee weakness. (3) A fair degree of improvement after an astragalectomy. The patient wears now only a leather ankle support. (4) An excellent result with nearly complete correction of deformity; very good stability, and no braces needed after astragalectomy.

Seven astragalectomies showed useful, very stable feet in four cases, slight instability in two cases, and serious instability in one instance.

Arthrodeses of the ankle joint yielded solid useful ankles in good position three times. One was stable and useful with a few degrees of motion in the joint. Two relapsed into their former bad conditions, and one of the two was followed by a successful astragalectomy.

Five tendo Achillis lengthenings and tenotomies showed two perfect results, and three improvements from partial corrections; and no bad terminations.

Five tendo Achillis strengthenings exhibited partial restorations of strength in four of the five instances. The fifth was no worse than in its original state.

Ages at times of operation varied between four and a half and thirty-eight years, averaging sixteen. Eleven were males and fifteen were females. None was operated upon until three years or more had elapsed after the onset of the paralysis. The latest result is shown in a thirteen year old girl, now eight years and one month after operation. The earliest result recorded is that of a girl of five years at time of operation, and two years and six weeks had elapsed when the last observation was made.

Post-operative Care. The weakest link in a chain of therapeutic procedures determines the strength of the whole and the degree of success of final results; also surpassing merits of certain individual links in the series do not compensate for weaknesses in other ones. Obviously, therefore, it is necessary for fair judgments to include in consideration of results the after treatment which all patients received.

All patients of the series had their feet and legs supported in plaster casts immediately after operation, and, as soon as the wounds were

found to be healing satisfactorily, all were sent home to report periodically at the out-patient department of the hospital. They came back walking with crutches, their operated feet held in corrected positions without having borne weight. Casts were split then, and massage, exercises and bakings prescribed, or in some instances iron foot braces were fitted and medico-mechanical treatments given while the feet were thus held. Crutches were discarded gradually as weight-bearing became gradually possible. Weight-bearing was begun late as a rule, sometimes just before the plaster casts were taken off, not until a month had elapsed after operation generally, and modified greatly according to circumstances. In the earliest instances casts were split and bivalved five or six weeks after operation, but frequently ten weeks elapsed before they were cut, and the longest periods were three months and a half.

Complete removals of casts ranged from six weeks to five months when no braces subsequently were to be worn, the average time being three months after operation. When braces were needed for a while they were substituted for casts on an average of four and a half months after operation, but these times for changing from one form of support to the other varied also between limits of six weeks and nine months. One long leg brace that is being worn at the present time was not fitted until four years had elapsed after the surgical treatment, owing to other complicating conditions.

Patients' records show that braces sometimes were worn for a period and then were discarded. This happened with five persons who wore their supports from six months to four and a half years before leaving them off, showing an average length of time of sixteen months that the leg irons were used.

Medico-mechanical treatments were instituted usually as soon as casts were made removable, but the ease with which regular returns to the hospital were possible influenced these physical therapeutic measures greatly. One patient received eight treatments in nine months, while another had fifty in three months, and many obtained none. Nine only of the twenty-six patients received massage, baking and supervised exercises regularly.

Durations of supervisions are important factors in final results, because old deformities may return very gradually without pain and without incapacitating individuals, so that the only safe efficient course for patients consists in submitting to occasional examinations from time to time. Seven of the twenty-six patients in the series were not lost track of for more than a few months at any time after their departure from the hospital ward. The others returned rather irregularly and more or less as they thought the circumstances warranted, the average length of time which they were under observation being sixteen months, varying between extreme limits of six weeks and four years. Poor results re-

ported by patient eighteen in the table may possibly be due to the fact that he was not seen but twice during the six weeks following his operation, just long enough to have fitted an arthrodesis brace, after which he was not heard from until written to for the final report.

The last statistics show that nine patients who had been wearing iron braces previously had finally discarded them after operation. Twelve who had worn no apparatus before, except foot plates or simple ankle supports, continued to wear nothing more after surgical care than they had previously used. Their improvements consist simply in partly correcting the existing degrees of deformity. More apparatus was required after operation by five persons, usually because improved foot conditions permitted more weight bearing, so that in consequence weakened knees required the support of long leg braces.

CONCLUSIONS.

Twenty-three patients from the total number of twenty-six were distinctly improved after their surgical experiences, although such results perhaps will seem rather unexpected to persons who have witnessed and made comparisons between healthy normal individuals and results of operations seen in infantile paralysis cases. Poor as some operations appear to be at first glance when judged from this standpoint, nevertheless they usually show increased usefulness if compared with previously more deplorable conditions that existed in each instance. Patients themselves agree with these medical judgments, and errors in the casual observations of disinterested persons rather than inefficiencies of surgi-

cal procedures must be held responsible for many bad impressions received of results of operations.

Among the twenty-three beneficial results there were four excellent ones, ten good ones, six that showed moderate improvement and three with slight betterment.

One of three unsuccessful results may be explained, in part at least, as due to this patient's neglect and failure in having post-operative supervision. He relapsed into his former condition and the other two seem slightly worse than previously to their operations.

It is of interest to observe that there were no overcorrections of deformities following tendon transplantations in this series, the usual result being partial correction accompanied by some functional improvement and with only occasional perfect success and complete restoration of function. Over-correction of deformities, however, occur, as demonstrated by the single previously overcorrected case, which was subjected to a second corrective operation to overcome the first bad result.

These late conditions indicate in a general way what may be expected from surgical treatments of fairly complicated infantile paralysis cases in a large hospital where there are a number of different operators and division of responsibilities in the after-care of patients. These statistics, however, are far too meagre and incomplete to possess weight in comparison between individual control of patients from beginning to end and coöperative direction of treatments by groups of physicians. All that can be said is that with a fair degree of coöperation methods herein described have proven themselves reasonably safe and successful.

LATE RESULTS OF OPERATIONS UPON FOOT DEFORMITIES FOLLOWING INFANTILE PARALYSIS.

NO. 1. THIRTEEN-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Tibialis anticus tendon transplanted into the arthrodesis line between the os calcis and cuboid bone.	Moderate varus deformity. Peroneal muscles and extensor communis digitorum very weak. Good strength in tendo Achillis group, also in adductors of the foot. Moderate cavus. For a short time a foot brace was worn, then it was discarded because no improvement was observed by mother to result from its use. Duration of paralysis, four years.	Six years and one month after operation the foot is slightly undercorrected. There is good stability in weight-bearing position and no brace is needed. Dorsal flexion of the foot is possible to a right angle passively. No voluntary dorsal flexion. Slight varus and cavus deformity still persist.	The patient is pleased because she can walk better. The foot is in much better position, with no appreciable tendency at present for the deformity to grow worse.

No. 2. EIGHT-YEAR OLD BOY.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Tibialis anticus tendon transplanted into the arthrodesis line between the os calcis and cuboid bone.	Moderate varus deformity and slight equinus. Peroneal group of muscles very weak. Tendo Achillis group normal. Tibialis anticus and tibialis posticus very strong. A varus foot brace was necessary. Duration of paralysis, five years.	Three years and eight months after operation the foot is slightly undercorrected, showing a little varus deformity and some calluses along its outer margin. Stability is good in weight-bearing position. Dorsal flexion is possible passively to a right angle, but voluntary motions dorsally are slight. No voluntary adduction or abduction of the foot.	The patient considers his operation a great benefit because he is able to walk well and work regularly now. There has been marked improvement in position, and a brace is no longer required.

No. 3. SEVENTEEN-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Tibialis anticus tendon transplanted into peristernum of os calcis. Osteotomy of os calcis and arthrodesis of calcaneo-cuboid joint.	Moderate varus deformity with slight equinus, also slight hyperextension of great toe. Peroneal group of muscles weak. Tendo Achillis group of muscles of moderate strength. Tibialis anticus and extensor communis digitorum strong. Voluntary dorsi-flexion and adduction of foot possible. Operation advised after ether manipulation and corrective plasters had failed. Duration of paralysis, fourteen years.	Four years and one month after operation the foot still remains slightly undercorrected. The same hyperextension of the great toe exists. The standing position is very stable with some varus deformity and adduction of the forefoot. There is no voluntary dorsal flexion, but passively the foot can be pushed up with some resistance to a right angle. A foot plate is worn to take the pressure off the head of the first metatarsal bone.	The patient thinks the operation is some benefit because the shape of the foot has improved and she can walk as much as desired. The foot is very serviceable.

No. 4. EIGHTEEN-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Tibialis anticus tendon transplanted into arthrodesis line between os calcis and cuboid bone. Extensor longus hallucis tendon transplanted into head of first metatarsal bone. Plantar fasciotomy.	Slight varus and slight equinus deformity. Hyperextension of great toe. Walked with a toe dragging gait. No braces worn. Muscle weakness confined mainly to peroneal group. Good strength in tendo Achillis group, also in tibialis anticus and extensor communis digitorum. Plantar fascia contracted. Duration of paralysis for many years.	Six years and nine months after operation the patient reports by letter that there is still slight undercorrection of the original deformity, but she can voluntarily raise the foot dorsally a little better than she could. No apparatus is worn. She disappeared from hospital supervision four months after operation with the foot in good position and wearing no plaster nor any iron support.	The patient says that the operation has been a little benefit. From medical standpoint the increase in voluntary motion probably signifies good function in the transplanted tibialis anticus muscle. Nothing is stated about the great toe deformity, and presumably it is at least no worse. Probably the result represents some improvement.

No. 5. TWELVE YEAR OLD BOY.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Tibialis anticus tendon transplanted under annular ligament into internal cuneiform bone. Tenotomy of tendo Achillis.	Moderate varus and moderate equinus deformity. Had callus under cuboid bone and slight contracture of tendo Achillis. Never wore foot brace. Duration of deformity ever since he began to walk.	Three years and four months after operation the foot is in perfect weight-bearing position, although very slight adduction of the foot remains passively. Dorsal flexion possible voluntarily to a right angle.	The patient thinks the operation a great benefit.

No. 6. THIRTEEN-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Tibialis anticus tendon transplanted into external cuneiform bone. Cuneiform osteotomy of neck of astragalus. Lengthening of tendo Achillis.	Moderate equinus and moderate varus position. Peroneal group of muscles weak. Good power in tibialis anticus and in tendo Achillis group. No apparatus worn. Duration of paralysis, ten years.	Eight years and one month after operation the foot is slightly undercorrected in weight-bearing position, and slightly more so without weight. Stability excellent. Voluntary and passive dorsal flexion of 75°-80°. No abduction but free adduction. Transplanted tibialis anticus actively functioning. Tendo Achillis group of moderate strength. Brace is now necessary.	She would go through the experience again for the benefit derived from the improved position and function of the foot.

No. 7. ELEVEN-YEAR OLD BOY.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Tibialis anticus tendon transplanted into cuneiform osteotomy line of external cuneiform bone.	Considerable varus deformity with adduction of forefoot. Slight equinus. Walks on outer edge of foot and ends of extended toes. Operation advised after previous ether manipulations. No brace worn. Duration of paralysis, many years.	Five years and one month after operation the foot is considerably undercorrected. Dorsal flexion limited passively to slightly less than a right angle. Calluses still present on anterior out part of foot. Slight function in transplanted muscle. No brace worn.	Patient thinks the surgical operation was some benefit, that there is some improvement in position of the foot.

No. 8. THIRTEEN-YEAR OLD BOY.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Peroneus longus tendon transplanted through the interosseous membrane into arthrodesis line between astragalus and scaphoid bones. (Fasciotomy of fascia lata below anterior superior iliac spine, followed two months afterward by open reduction of dislocated hip.)	Foot was useless and held in a valgus position. Patient walked with crutches. Hip dislocated. Thigh contracted in flexed position of twenty degrees. Some muscular function in iliopeas, glutei and hamstring muscles; also in peroneal group, tendo Achillis and in extensor longus pollicis. Duration of paralysis, twelve years.	Six years and two months after operation the foot is held in fairly good position by the foot plate of a long leg brace. Still some lack of correction of original deformity. Passive motion possible to a right angle, and dorsal flexion voluntarily is distinctly increased through function of the transplanted muscle. Still uses crutches.	Patient thinks the foot is very much more useful because he can bear some weight upon it and avoid so much weight on crutches.

No. 9. TWELVE-YEAR OLD BOY.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Peroneus longus tendon transplanted into arthrodesis line between astragalus and scaphoid bone, passing through interosseous membrane and under annular ligament.	Moderate valgus deformity. Tibialis anticus muscle weak and tendo Achillis group less so. Peroneal group of muscles and extensor communis digitorum strong. No brace worn. Duration of paralysis, nine years.	Five years and one month after operation he reports by letter, that the foot is still undercorrected and probably will require a brace before long although none is used now. There is a tendency for the valgus deformity to return, but he states that he has a little more voluntary motion in the foot than previously.	He thinks the operation a little improvement.

No. 10. EIGHTEEN-YEAR OLD BOY.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Extensor longus hallucis tendon transplanted into head of first metatarsal bone. Fasciotomy of plantar fascia. Lengthening of tendo Achillis.	Moderate equinus and slight varus. Hyperextension of great toe. Abductors of foot were weak. Plantar fascia contracted. Tendo Achillis shortened. No brace worn. Duration of paralysis, since babyhood.	Four years after operation the foot is still somewhat undercorrected. Cavus and contracture of tendo Achillis persist in lessened degree. Dorsal flexion to a right angle is impossible, and patient walks on heads of metatarsals more squarely than previously. Calluses present in diminished degree. Hyperextension of great toe lessened but not perfectly corrected. No apparatus worn. He returned to the hospital after discharge from the ward, and the cast was removed, then he disappeared entirely. This fact probably has bearing upon the degree of improvement finally shown.	Patient says the foot appears straighter to him and walking has been improved.

No. 11. TWENTY-YEAR OLD WOMAN.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Extensor longus hallucis tendon transplanted into head of first metatarsal bone. Tenotomy of tendo Achillis.	Some equinus deformity and great toe hyperextended. Tibialis anticus and extensor communis digitorum muscles are somewhat weakened. No apparatus worn. Duration of deformity, eighteen years.	Two years and three months after operation the foot shows nearly perfect correction of equinus deformity and undercorrection of the great toe defect. Voluntary motion is possible to a right angle in dorsal flexion. The transplanted tendon of extensor longus hallucis functions only slightly. A foot plate is worn.	She is much pleased because she is able now to walk any distance desired without discomfort. The foot is in much more serviceable position with contractures of tendo Achillis completely relieved.

No. 12. FIFTEEN-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Extensor longus hallucis tendon transplanted into head of first metatarsal bone. Arthrodesis of first phalangeal joint of great toe. Tenotomy of tendo Achillis. Plantar fasciotomy.	Marked equinus position. Great toe hyperextended and flexed. Extensor of great toe weakened. Tendo Achillis of good strength. Dorsal flexors of foot weakened but not paralyzed. No apparatus worn. Duration of paralysis since babyhood.	Two years and nine months after operation the foot is somewhat undercorrected for equinus deformity. Some calluses are still present under heads of metatarsal bones. Voluntary and passive motions in dorsal flexion are stopped apparently by bony obstruction at 80°. Extensor longus hallucis tendon is functioning well in its transplanted position. Slight voluntary adduction and complete voluntary abduction of the foot are possible. No apparatus worn.	Patient says there has been an improvement in her walking after operation.

No. 13. FOUR AND A HALF-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Peroneus tertius tendon transplanted into periosteum of scaphoid bone. Silk ligament passed from tibia to tarsal bones at inner side of foot.	Marked valgus deformity. Tendo Achillis group of muscles, peroneal muscles and extensor communis digitorum are fairly strong. Tibialis anticus, extensor longus hallucis and tibialis posticus are weak. Valgus brace worn. Duration of deformity, three years.	Seven years and one month after operation the foot is held in practically perfect weight-bearing position. Silk ligament strong and functioning well. Slight function in transplanted tendon. No voluntary dorsal flexion but passive motion dorsally to a right angle. No brace needed.	Patient's mother thinks the foot has been greatly improved, that there has been much improvement in form, stability and usefulness.

No. 14. NINE-YEAR OLD BOY.

Tibialis posticus tendon transplanted through interosseous membrane under annular ligament into arthrodesis line between os calcis and cuboid bone. At second operation extensor longus hallucis tendon transplanted into head of first metatarsal bone.	Moderate varus deformity resulted from previous surgical efforts to correct valgus deformity. The patient had been operated upon originally in another state and his valgus deformity considerably overcorrected. An attempt was made then to compensate for the varus position by a second operation of transplanting the tibialis anticus tendon into the external cuneiform bone. Varus position still persisted and the patient was walking with crutches with his foot held in a plaster when admitted to the Orthopedic ward of the Massachusetts General Hospital. Duration of paralysis, several years.	Seven years and two months after operation the patient reports by letter that he can use his foot better and does not wear a brace. In walking the foot slaps down rather hard, and there is apparently some hyperextension and flexion of the great toe.	The patient thanks the doctors in the letter for all that was done. Presumably the last two operations represent a partial correction of deformity with a more serviceable foot.
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No. 15. THIRTEEN-YEAR OLD GIRL.

Tibialis posticus and peroneus tertius tendons transplanted into tendo Achillis. Transverse osteotomy of os calcis and elevation of its posterior fragment for reunion in corrected position.	Moderate calcaneus deformity with pes cavus. Slight power in all lower leg muscles. Tendo Achillis group weak. Partial paralysis of quadriceps and biceps muscles in thigh. No brace worn. Duration of paralysis, seven years.	Four years and eight months after operation the foot is still in calcaneus and cavus position of less degree. Position in weight bearing is good but more unstable. Some strength in tendo Achillis. No brace worn although one has been tried unsuccessfully.	Patient states that she turns her foot more than she did before operation, and thinks the condition is worse. From an anatomical standpoint there has been some improvement in form at the loss of the more important feature, functional stability. An unsuccessful result.
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No. 16. FOURTEEN-YEAR OLD BOY.

Arthrodesis of ankle joint preceded two months, by plantar fasciotomy and arthrodesis of astragalo-scapoid joint.	Varus position with considerable cavus deformity. Walked with brace and high soled shoe. Muscles of lower leg badly paralyzed including tendo Achillis group, peroneals, extensor communis digitorum and tibialis posticus. Duration of paralysis, since babyhood.	Five years and three months after operation a friend reports that the foot is all right. "A great success." Patient considered one of the finest dancers in town. On leaving the hospital he returned twice to the out-patient department, was fitted with a brace and then disappeared seven weeks from time of operation.	An improvement from the patient's standpoint.
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No. 17. TWENTY-ONE-YEAR OLD MAN.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Arthrodesis of ankle joint. Tenotomy of peroneal tendons.	Valgus deformity. No power in leg muscles except slight function in peroneal group and in extensor communis digitorum. Valgus foot brace worn. Duration of paralysis, eighteen years.	Six years and four months after operation the foot is held in excellent weight-bearing position with practically no motion in the ankle joint. There is still a little cavus deformity. No apparatus needed.	The patient is pleased with the result, and there has been marked improvement in usefulness of the foot from improved position and stability.

No. 18. SEVENTEEN-YEAR OLD BOY.

Arthrodesis of ankle joint. Arthrodesis of astragalo-scapoid joint. Peroneus tertius tendon transplanted into scaphoid bone.	Marked valgus deformity. Anterior part of the foot abducted. Lower leg muscles all weak. Tibialis anticus and tibialis posticus muscles weakest. Peroneal group strongest. Tendo Achillis group and extensor communis digitorum intermediate in strength. Walked with crutches and very little weight bearing on affected foot. Duration of paralysis, since babyhood.	Seven years and three months after operation the patient reports by letter that his foot turns in as badly as before operation. He used crutches for six years then his local shoemaker made him a shoe which he uses with a brace and a cane. He returned twice to the out-patient department where he was fitted with a brace, after which he was lost sight of entirely six weeks after operation.	He says the operation did him no good, although he is no worse off apparently. Lack of supervision and of post-operative care seem important factors in the late results of this case.
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No. 19. TWENTY-NINE-YEAR OLD WOMAN.

Arthrodesis of the ankle joint. Fracture of lower end of fibula.	Valgus deformity. Stability of foot poor. No power in anterior tibial muscle or peroneal group. Tendo Achillis group weak, also quadriceps weak in thigh. Valgus foot brace worn. Duration of paralysis, many years.	Five years and two months after operation there is firm union in the ankle joint with a little voluntary and passive motion at medio-tarsal joint. Stability and weight-bearing position are excellent. A little cavus deformity persists. Wears a plate.	She thinks the operation a great benefit, and has not missed a day's work for four years. From an orthopedic standpoint the result is excellent.
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No. 20. THIRTY-TWO-YEAR OLD MAN.

Arthrodesis of ankle joint preceded five weeks by operation, plantar fasciotomy, division of calcaneo-scapoid ligament and osteotomy of astragalus. (Jones' operation in two stages.)	Valgus position. Cavus deformity. Valgus foot brace worn. Lower leg muscles all practically paralyzed. Duration of paralysis, many years.	Four years and eight months after operation the foot is in good right angled weight-bearing position with ten or fifteen degrees of passive motion. Some persistent cavus. A few degrees of adduction and abduction passively are possible. No brace needed. He remained under hospital supervision only five months, being fitted with a brace, and then he disappeared, walking satisfactorily without crutches.	A decided improvement from patient's standpoint.
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No. 21. TWENTY-YEAR OLD WOMAN.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Three operations. An arthrodesis of left ankle joint was followed in one week by an astragalectomy in the right foot. The third operation an astragalectomy, with transplantation of peroneal tendons into tendo Achillis, followed the arthrodesis of the left ankle in eight months, and was performed on account of increasing motion and valgus deformity following the first operation.	Extensive paralysis of both legs. Double leg braces worn. All muscles except tendo Achillis group were paralyzed on the right side. All muscles except intrinsic muscles of the foot were nearly paralyzed on the left side. Slight power in peroneal group. Hamstrings and quadriceps active in right thigh. Hamstrings weak and quadriceps fairly active in left thigh. Duration of paralysis, since eight months of age.	Three years and one month after operation she can walk around the house without any apparatus. Awkward slow gait due to genu valgum. Both feet are in good weight-bearing positions with good stability. Passive motions of thirty or forty degrees are possible. Right tendo Achillis fairly strong. Left tendo Achillis weak but functioning.	Patient considers the operation a great success because she is no longer obliged to wear braces, and is able to get around comfortably although somewhat awkwardly.

No. 22. THIRTY-EIGHT-YEAR OLD WOMAN.

Astragalectomy. Transplantation of peroneus longus and peroneus brevis tendons into tendo Achillis. Peroneus tertius transplanted into tibialis anticus tendon.	Calcaneo valgus position. Instability in weight bearing. Tendo Achillis group weak. Tibialis anticus paralyzed. Peroneal muscles strong. Foot brace worn. Duration of paralysis, since childhood.	Two years and three months after operation the foot is in much improved weight-bearing position. Fifteen degrees of passive motion at the ankle, and a few degrees of voluntary motion from the transplanted peroneus tertius. Tendo Achillis fairly strong. Still some instability in foot, but this is not noticed very much because a long leg splint with foot plate has to be worn on account of a weak knee.	She thinks the operation a benefit, although obliged to wear more apparatus now, because she can walk better on the foot. The foot is more serviceable from having an improved position.
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No. 23. FIVE-YEAR OLD GIRL.

Astragalectomy. Transplantation of peroneus longus and peroneus brevis tendons into tendo Achillis.	Calcaneo valgus position. Lower leg muscles all weak, strongest ones are peroneal muscles and extensor longus hallucis. No brace worn. Duration of paralysis, since birth.	Two years and six weeks after operation the foot is in excellent position with good stability. Passive motion of fifteen or twenty degrees. Slight but useful function in tendo Achillis, also very slight function in anterior tibial and extensor communis digitorum tendons. No brace needed. She disappeared two months and three weeks after operation when the cast was removed.	Much improvement from patient's standpoint.
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No. 24. TWELVE-YEAR OLD GIRL.

Astragalectomy. Tenotomy of peroneal tendons.	Marked varus deformity. All muscles of lower leg very weak. Duration of paralysis, six years.	Two years and eleven months after operation the foot is slightly overcorrected into a little valgus. Good stability in weight-bearing. A few degrees of passive motions at the ankle are possible. No voluntary motion of the foot. Wears a long leg splint on account of weakness of knee.	She thinks the operation did some good, for in spite of more apparatus worn it seems that the leg is more useful.
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No. 25. SIXTEEN-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Astragalectomy. Two years later extensor longus hallucis tendon was transplanted to head of first metatarsal bone, and first phalangeal joint of great toe stiffened.	Moderate valgus deformity. All lower leg muscles weak. Moderate hyperextension of great toe. Hip dislocated. Quadriceps partly affected in thigh. No brace worn. Duration of paralysis, since babyhood.	Six years after her first operation the foot shows a good position but is rather unsteady in weight-bearing. There are a few degrees of passive motion at the ankle. The position of the toe has been improved, but some motion in first phalangeal joint of toe still exists. No braces worn.	Patient says she is worse than before operation because of the instability of the foot.

No. 26. FOURTEEN-YEAR OLD GIRL.

MAIN POINTS OF OPERATIONS.	CONDITIONS BEFORE OPERATIONS.	OBJECTIVE CONDITIONS AFTER OPERATIONS.	SUBJECTIVE FUNCTIONAL RESULTS.
Astragalectomy. Peroneus longus tendon transplanted into tibialis anticus tendon. Peroneus brevis and tertius tendons transplanted into tendo Achillis.	Calcaneo-valgus deformity. Tibialis anticus paralyzed. Tendo Achillis group weak. Peroneals fairly strong. Some cavus deformity. Wore leather ankle support. Duration of paralysis, twelve years.	Four years and five months after operation the foot is in good weight-bearing position, slight valgus with arch well preserved, good stability. Voluntary dorsal flexion is possible through a few degrees. Tendo Achillis of fair strength. Passive motion to right angle dorsally, also moderate adduction and abduction. Wears a leather ankle support.	Considerable improvement from patient's standpoint.

THE CARNIVOROUS AND HERBIVOROUS TYPES IN MAN: THE POSSIBILITY AND UTILITY OF THEIR RECOGNITION.

II. CERTAIN GENERAL CONSIDERATIONS.

By JOHN BRYANT, M.D., BOSTON.

INTRODUCTION.

THE proposition of the carnivorous and herbivorous types in man, as presented in a recent number of this JOURNAL,¹ has met with numerous expressions of interest in various quarters. Being, however, somewhat new, it is doubtless not to be wondered at, that although the basic idea appears to have created a favorable impression, the utility or even the possibility of applying the theory to the actual conditions of practice has remained in doubt. Therefore it is desired to submit a few general observations bearing upon this phase of the question, before considering in detail the set of tables given in the first paper of this series.

The editor of the JOURNAL, in a very sympathetic discussion² of this first paper, mentioned the diatheses, considered certain aspects in the evolution of the types, their characteristics, and referred to possible underlying sex differences.

The writer is in entire agreement with the editor's discussion of these points, which will be re-

viewed and perhaps extended, and then an attempt will be made to show a few angles at which the type theory comes into close contact with actual every day life; angles at which it is believed that the application of the theory will prove of service as a distinct aid in the obtaining of practical results—for example, by the educator, the employer of labor, the life insurance actuary, and the doctor.

DIATHESSES.

In his remarks upon the "Regulators of Metabolism," Paton³ has grouped the three chief influences concerned, in the following concise manner:—

1. Hereditary Inertia or Inherited Developmental Tendencies.
2. The Nervous System.
3. The Chemical Products of Various Organs, the So-called Internal Secretions.

Of these three factors the third doubtless comes to occupy the most prominent place in post-embryonic or certainly in adult life. Thus the various diatheses which have been described ultimately represent the outward manifestations of the vagaries of the ductless glands. There is some evidence to show that within limits the activities of these glands may be varied by persistent attention to diet, but if one recalls the rather constant differences in the ductless gland supply of the two types it will not be difficult to prophesy in which group a given diathesis will

fall: thus exophthalmic goitre suggests the carnivorous, and myxedema the herbivorous type.

EVOLUTION.

Treves⁴ studied evolution in 200 different species of animals, as illustrated by changes in the intestinal canal; he concluded that evolution of the animal species largely depended upon food environment, and that although a gut might acquire specialized characteristics, these were easy to recognize, while the rudimentary character of a given gut remained very constant. Upon the strength of this work, he stated that the carnivore, with its short simple intestine, can be traced back by way of the felines, the canines, the bears and the raccoon, through the insects and cheiroptera, to the amphibians and the monotremes, among the latter of which one finds the echidna, and still lower the ornithorynchus. The herbivore, on the other hand, has an entirely different intestinal ancestry, leading back by way of the rhinoceros, the tapir and the horse, the hog, the hippopotamus and the ruminants, through the ungulates to the rodents and the marsupials. There is no overlapping. These two main groups run parallel and distinct, and are themselves distinct from a third group composed of the edentata which, from the evolutionary point of view, leads nowhere; its ancestors are extinct.

In the human also it seems that the statement of Treves concerning the dependence of type upon food environment must hold good. For example, many observers have demonstrated that within a given species of animal intestinal length is dependent upon the digestibility of the ingested food. But back of such lesser variants one finds active the restrictions imposed by climatic conditions. Thus temperature controls not only food distribution, but growth and differentiation, since these two are incompatible. At the equator light and heat are intense; plant growth is abundant, but human growth is stopped by early differentiation and maturity. In the temperate zone toward the cold area, conditions are optimum for human growth, but plant growth is less luxuriant. In the arctic regions, with a minimum of both light and heat, human growth is again stunted, and plant growth is conspicuous by its absence. As plant growth decreases with the distance from the equator, so, conversely, man's food becomes more and more carnivorous the nearer he lives to the arctic zone; in these regions he must eat flesh or starve. On account of these and other factors it comes about that man at the equator eats a high carbohydrate diet, the dweller in the temperate zone uses a mixed diet, and the arctic yields a pure meat with high fat diet. It is only reasonable to suppose that this also must have its effect upon development. Doubtless it is for some of these reasons, as well as on account of the higher proteid diet, that the children of the immigrant from Southern Europe tend toward the carnivorous type in our northern states.

Arguing somewhat after this manner, Cattell⁵ has asserted that a boy born in Massachusetts or in Connecticut is fifty times as likely to become a scientific man as a boy born along the southeast seaboard, from Georgia to Louisiana—that is, if he stays put. Somewhat similar ideas are advanced by Ellsworth Huntington,⁶ in an article entitled "Is Civilization Determined by Climate?" He draws attention to the results of bringing the negro north and of bringing the white man south in America, as indicating an inversion of hereditary ability by climate. Huntington recognizes only five centres of high civilization and climatic energy (variability) at the present day: Western Europe, Northeastern United States, Japan, the Pacific Coast of the United States, and Southeastern Australia including New Zealand. He holds that the decline of ancient civilizations, such as those of Mesopotamia, India, and China, was synchronous with climatic alterations. When one keeps in mind these statements, and the fact of the retrogression of the glacial border line during the past ages, it is perhaps interesting if not profitable, to speculate on the northward march of power in Europe. First Egypt, then Rome, Spain and France held the sceptre. Now it is England. After England, then what, and when?

TYPE CHARACTERISTICS.

Given the presence of the two human types in one locality, what may be expected of them? History provides abundant answer. Thus in England the square-jawed Roundheads under Cromwell stirred up the country for a few years and disappeared. The hatchet-faced Puritans found England too crowded and settled a new world. Today hawk-nosed bird-men rule the upper air. The carnivore is the restless pioneer, inductive, dying ever on the outskirts in search of something new.

The herbivore is the sedentary stabilizer, deductive, ever at his appointed task. Both are necessary to the progress of the world, and neither can do the work of the other. It seems unlikely that the human species will ever be reduced to one type, but should this come to pass one might hazard a surmise that the surviving type would be a mixed one, perhaps three parts carnivore and one part herbivore.

SEX AND TYPE.

There can be no question but that in the human species the female tends more to the herbivorous and the male toward the carnivorous type. Doubtless, as among the American Indians the influence of the chase and of the meat diet worked in one direction in the men, and the sedentary habits, hard muscular work, and carbohydrate diet of the squaws was active in the other direction; meat and the wilderness, civilization and cereals, are still in a sense synonymous. But there is another and no less potent factor yet active. This is the demand of pregnancy and

lactation upon the calcium metabolism of the woman. Under present conditions meat for the table is carefully drained of most of its calcium before it leaves the slaughter house. This is proved by the fact that it has been possible for numerous workers to produce a calcium deficiency in laboratory animals by the simple process of feeding them unlimited quantities of meat, corn, and fat. Consequently if a woman is to get an adequate calcium supply for the period in question she must get it from vegetables, from an herbivorous diet, and it is possibly for this reason that many women instinctively crave a calcium-high carbohydrate diet during pregnancy. For this reason then, if for no other, it would seem that woman must ever remain at least predominantly herbivorous, in spite of her very evident present tendency toward the male type. This tendency also doubtless depends on the fact that increasing prosperity results in increasing proteids, especially meat, in the diet, a phenomenon now evident not only in this country, but all over Europe, and in Germany in particular, where per capita meat consumption has doubled in recent years.

The carnivore is dominant among the lower animals, and among men today unless royalty and nobility are now effete, but for the good of the race it is to be hoped that women do not aspire too seriously to join the dominant group.

THE EDUCATOR.

Being concerned mostly with children in the adolescent formative stage, the constructive opportunities of the educator loom large, and a knowledge of type puts at his disposal a means of insight into the mental and physical makeup of his pupil which can in no other way be so easily acquired; the possibilities for helpfulness and prevention are almost limitless. Environment is doubtless important, but it must after all be considered as affecting different material in different ways, and short fat John Johnson will under a given stimulus react in an absolutely different manner from lanky overgrown James Jamieson. Here is a new boy. What is he and how will he act and for what will he be best prepared? Simple anthropometric measurements at once determine whether he is of an extreme or an intermediate type. If he is of intermediate type, a medical examination, with perhaps a thorough Roentgenographic study of the gastrointestinal tract will further aid classification. This accomplished, all else within reasonable limits of error and with only sufficient exceptions to prove the rule, may in a broad way be predicted. The physical and the mental education may be directed into the proper channels, and the working boy may be prepared for a definite occupation with full assurance that it will be one in which he will appear to good advantage. There is also a possibility that when an extreme type is recognized early, persistent attention to diet over years of time may produce some modification of type in a given individual,

should this be thought desirable. In a word, a study of type is one more aid to efficiency.

THE EMPLOYER OF LABOR.

The man and the job: will they fit each other? Some such question is ever presenting itself in one form or another to the employer or his subordinates. How is one to tell? The expert knows at a glance perhaps. Ask him how he knows, and it is doubtful if he can go much further than to say that his judgment is based on experience. Type provides another key, should experience be scanty.

A large employer of labor in one of the government services was discussing type with me. He found the subject interesting, for long experience had enabled him to divide labor into two classes. Being asked on one occasion by the chief of service how much help he wanted for a certain piece of work, he replied without thinking how it would sound to his chief, "about so many broad-backs and so many narrow-backs." Under the circumstances this remark necessitated apology and explanation, but in it lies a nut-shell compend of the relation of labor to type. The explanation was to the effect that the broad-backs were the office force, who stayed behind and worked up the data obtained by the narrow-backs; the latter were to draw their pay for their proficiency in overcoming obstacles to success in field work.

THE LIFE INSURANCE ACTUARY.

The actuary now attributes great importance to blood pressure; it is precisely on this question of blood pressure that knowledge of type may be of use to the actuary, since it is one of the most characteristic points of difference between the two types. Assuming that the normal pressure ranges from about 110 to 140 (systolic) in healthy adults, this range of 30 m.m. may be split in half at 125. The carnivore will usually be found to have a pressure below, and the herbivore above this figure. Therefore a reading of 95 or of 155 must be interpreted according to type. In disease, pressure tends to fall in the carnivore but to rise in the herbivore. Conversely, high pressure is more suggestive of serious trouble in the carnivore, and low pressure in the herbivore. In other words, a pressure of 155, which may be said to be 15 m.m. above the upper normal limit, is so only for the herbivore; for the carnivore it is an increase of 30 m.m., or 100% more serious an indication than for the other type, corresponding to a reading of 170 for the herbivore. The same argument applies to the reading of 95; it is only 15 m.m. low for the carnivore, but 30 m.m. low for the herbivore, corresponding to a drop to 80 m.m. in the carnivore.

A further illustration of the importance of considering type is provided by the way in which certain drugs produce a given action in this person, but its contrary in another person. This

is entirely paralleled in work upon the lower animals, as for instance by the finding of Dale and Laidlaw,* that beta-aminazolyethylamine[†] produces a large vaso-dilator fall of blood pressure in carnivora, but a vaso-constrictor rise of pressure in the rabbit. It is thus obvious that type provides the actuary with an additional means of calculating the risks he is called upon to insure.

THE DOCTOR.

The set of tables recently presented¹ makes it unnecessary to discuss at length the value of a knowledge of type to the medical man, especially in view of the publication in this JOURNAL of the recent Shattuck Lecture by Dr. Joel E. Goldthwait,² who has in his essay presented a valuable summary of present knowledge of type, the results of his own observations and those of others, under the title "An Anatomic and Mechanistic Conception of Disease." To this article and to the editorial³ accompanying it, those interested are referred, with the assurance that they will be convinced on at least two points—that present conscious medical appreciation of type only follows upon some thousands of years of unconscious appreciation of type by the non-medical world, and that the chief lesson to be learned is concerning the value of education upon this subject.

The laboratory worker who conducts his investigations without regard to type leaves them open to criticism. Thus metabolism experiments must be conducted upon individuals of the same type or the subjects will react differently to a given diet. Doubtless in this fact lies a possible suggestion for the solution of certain discrepancies reported by various laboratories working upon a given problem.

Appendicitis has for some years been used as a touchstone for any proper medical discussion. One has to look no further to find a means of illustrating the value of applying type to clinical medicine. The carnivore may have a chronic appendix for years, but the chances are more than ten to one that it will not kill him. It may be said in parenthesis that in him the appendix gets a bad name when it is usually at fault only secondarily to trouble in the region of the hepatic flexure, or because, for instance, the splenic flexure is very high and difficult of passage for ingested food. If, on the other hand, the herbivore ever gets appendicitis, it is likely to be primary, fulminating, and apt to flood the peritoneum with pus, and to cause sudden death. There is nothing mysterious in this difference of the disease in the two types. It is to be expected; it is the natural result of rather constant anatomical differences in the shape of the appendix. The appendix in the carnivore is conical in outline, and the base of the cone is always at the orifice of its lumen, making obstruction improbable. The herbivore, on the other hand, is the unfortunate possessor of an

appendix shaped more like a tube with end blind and sides parallel. Its diameter is as great at the tip as at the orifice, unfortunately often greater. There is even a tendency to stricture at the orifice, with results which are only too obvious. Thus it comes about that this type of appendix not infrequently acts as an efficient closed tube for the cultivation of trouble in the form of bacteria. In this connection it may be observed that in a somewhat extensive series of autopsies studied in Europe,⁴ it was without exception the perfectly developed, beautifully modelled herbivorous type of child which died of fulminating appendicitis; the scrawny children died of other things, but not of trouble primary in the appendix.

CONCLUSION.

The theory of type can and should be applied to the conditions of practice. Knowledge of the meaning of type is an asset valuable to the practitioner in every field of human endeavor.

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- ⁸ Goldthwait: BOSTON MED. AND SURG. JOUR., 1915, cxxxii, 381.
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PNEUMOCOCCIC ARTHRITIS, WITH REPORT OF SIX CASES.

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PNEUMOCOCCIC arthritis is a condition which usually occurs during the course of a pneumonia, and is relatively infrequent. It generally appears during the first nine days of a pneumonia, but may come on at a later period. Primary pneumococcic arthritis attacks are rare. Severe arthritis may follow a mild pneumonia.

Occurrence. Arthritis occurs in about 0.1% of pneumonias. Strickler, quoted by Richardson,¹ has noted that out of 11,846 cases of pneumonia, arthritis occurred 800 times, or 14%, which is unusually high. Herrick, on the other hand, has reported that it occurred but 14 times in 11,706 cases of pneumonia in foreign clinics, or one case to every 800 of pneumonia, which it may be stated is about the usual percentage of occurrence. It may occur at any age, is apt to be more frequent in the first ten years of life, and is seen more often in the male than in the female.

Primary joint infections are more common in

[†] The amine from histidine commonly called histamine or ergamine.

children than in adults, and previous damage to the joint by trauma and rheumatism predispose to infection. Alcoholics are particularly prone to infection.

Up to 1911 there had been reported but 172 cases of pneumococcal arthritis, showing that it is a relatively rare condition. The first case where the organism was isolated and identified was reported in 1888 by Weichselbaum. Buckley² states that 34% of the 172 cases collected by him occurred in the first five years of life. Herzog³ states that joints of children in early life are predisposed to pneumococcal infection the same as other serous membranes, that is, pleura, peritoneum, pericardium and meninges. It is more apt to be rare in adults without a preceding lung infection.

Herzog believes that the frequency of infectious arthritis in infants is due to the structure and vascular arrangements of the bony portion of the joints. He quotes Neumann, who has shown that the capillaries of the bone marrow in infants are of a larger calibre than the smallest arteries, an arrangement whereby the blood current is rendered extremely slow and the deposition of infective organisms in the tissues favored.

Sex. Buckley reports that in an analysis of his collected cases over ten years of age he found approximately 78% males and 22% females. This disproportion has usually been ascribed to the influence of trauma, which unquestionably predisposes to infection, and to which the male is more subject than the female. In the six cases, five children and one adult, I am going to report, there were two males and four females. The question of trauma does not hold true to such an extent in children under ten, and the predominance of the male sex is not shown in a study of cases occurring in the first decade or semi-decade.

Period of Onset. Buckley states that in 73 cases in his series eleven days was the average time elapsing between the onset of the pneumonia and the development of the arthritis. In this series of six cases of mine the first case developed three weeks after a tooth extraction; the second five days after a primary trauma of the knee joint, with no pneumonia at any time; the third had pneumonia five weeks before, and double otitis media three weeks before knee involvement; the fourth was an adult, an elderly man, who developed a suppurative shoulder nine days after the onset of his pneumonia, and following a trauma to his shoulder the day before the onset of his pneumonia, during the clearing up of an unresolved condition of consolidation in his lungs; the fifth had had several attacks of broncho-pneumonia covering a period of years, and the knee became involved five days after an acute attack of otitis media; the sixth had had an attack of pneumonia two weeks before the onset of the knee symptoms.

In this series it can be seen that the knee was involved five times and the shoulder once. This is true of all series reported, the knee being the most frequently involved, with the shoulder next

in frequency. The other large joints follow, such as the elbow, hip, ankle and wrist. Trauma, previous joint disease and diminished local resistance are adequate causes for local infection, for it has been shown by Rosenow and Cassati that the pneumococcus is usually found in the blood of a person suffering from a pneumonia. In regard to the cases which had had no previous pneumonia, but whose infection was secondary to some local infection, such as a tooth abscess or an otitis media, it can be stated that many otitides mediae in children are due to the pneumococcus, and that pneumococci may always be found present in an individual's mouth.

The process is usually suppurative, but in a few cases may be serous.

There may be three forms of such joint involvement, namely: (1) light, without visible changes, (2) serous form, (3) purulent form, which is the most common. There may also be periarticular conditions with secondary joint involvement. The cases appearing during the course of a pneumonia are said to be much more severe than those appearing later. The mortality has been quoted all the way from 75% (Zezas⁴) to slightly over 50% (Buckley). Herzog states that the mortality in infants is about 39%. In regard to children, the end results are usually good as far as the joint is concerned.

Forms 1 and 2, as noted above, may get well without other treatment than simple fixation, and rarely require more than that, except possibly aspiration. Provided free drainage is established where pus is present there is usually very little permanent damage done to a joint in children. Given free drainage the pus ceases to spread in any direction, and the affection is generally sharply localized.

The prognosis is usually good, provided the drainage is satisfactory and the infection has occurred after the pneumonia has cleared up. Certain cases are so overwhelmed by the infection, however, that they die in spite of adequate drainage. Ankylosis of the joint is rare.

Clinical Symptoms. Clinically the condition is recognized by the ordinary signs of an acute inflammation, and if following or during an attack of pneumonia the diagnosis is reasonably clear. The actual diagnosis, however, depends on bacteriological examination. Infection of a joint may occur during the course of a pneumonia, which, however, is not necessarily pneumococcal in origin, and a careful bacteriological examination is necessary to establish a diagnosis. The joint is swollen, tender, not reddened, sensitive to motion and to pressure. There is also an irregular or high temperature, which usually drops by crisis following evacuation of the pus.

Treatment. The joint may be aspirated to determine the presence or absence of pus and to determine the bacteriological contents, following which, if pus is present and the symptoms persist, there should be an open incision and free drainage. In children wholesale opening of the joint with curetting, or opening of the shaft of the

bone should not be practiced, for these measures do more harm than good, and tend to spread the infection and increase the destructive process.

Following operation, fixation of the part by a splint or a plaster shell until the wound has ceased to discharge is essential.

Bacteriology. Attempts have been made in two of these cases to be reported to differentiate the types of pneumococcus in accordance with those described by Cole,⁴ but we were unable to produce the pneumococci in pure cultures by means of passing them through mice, even when we used emulsions of the affected lungs or pus from the knee joint.

In detail the following six cases are reported:

CASE 1. J. C. Boy, age 4. Children's Hospital, January 11, 1908. Three weeks before entrance child had a tooth pulled. Two days following this the cheek swelled and has remained swollen. During this time he was up and about playing, although he seemed feverish at times. On January 1, 1908, eleven days before entrance, the child got up as usual, but at noon the father noticed that he was lame. The child kept putting his hand down on to his right thigh. At first the knee was swollen, this later disappeared, and the thigh above became more swollen. Has been in bed for past ten days. Three days ago, there appeared a swelling on the right side of the face over the region of the parotid gland. The father thinks that the child breathes faster the past three or four days, and has had a slight cough for several days.

Physical examination showed a child, well developed and poorly nourished, dusky pale color, cervical glands enlarged, over carotid on right there is a tender, warm, fluctuating and reddened area, bloody nasal discharge, pharynx reddened, looks raw, one shallow ulcerated area size of a split pea between right anterior pillar and uvula. Breathing rapid and shallow, lungs show diminished resonance, and typical pneumonic areas over whole of both lungs. Extremities—Right leg flexed at hip to about 50 degrees, cannot move leg. Right thigh swollen, markedly so in its inner and posterior aspect, and rather fusiform in shape. Very tender, marked fluctuation, no apparent involvement of hip joint, slight general icterus.

Operation with gas. Incision over area of greatest fluctuation on thigh and about eight ounces of foul, yellowish-green pus evacuated, rather thick. Culture showed pure pneumococcus. The next day, the 12th, he was given 3000 units of anti-pneumococcus serum without benefit. The 13th both ears began to discharge, and there was increasing delirium, with coma, twitching of right arm, retraction of head, etc. The day following, the 14th, he died. There was no autopsy, but cultures from the throat, the thigh abscess and from the blood showed pure pneumococcus. There was no x-ray of the thigh taken, for the child was too sick to be moved.

Case 2. A. K. Girl, age 15 months. Five days before entrance the child, while walking on the floor, slipped and fell, striking her knee. The next day she could not walk, and has not been able to since. Four days ago the knee began to swell. Motion of the knee causes pain.

Physical Examination. Fat, well-developed baby, breast-fed. Right leg normal. The left leg was held

flexed at about 45 degrees, and there was considerable pain on attempts at motion. All the normal landmarks about the knee were obliterated. The surface temperature was markedly increased, with considerable capsular thickening. The patella was movable.

The child was kept quiet, but the temperature kept up to about 103, so the joint was aspirated on the second day after admission. Examination of the fluid aspirated showed the pneumococcus in pure culture. The day following the aspiration the joint was opened through two lateral incisions. The synovial membrane was lightly injected, but not otherwise abnormal. The pus thin, grayish, slightly blood stained, with few white flakes of fibrin. Beneath the patella there was a white mass not adherent, about $1\frac{1}{4}$ in. long and $\frac{1}{2}$ in. wide, which was removed. The joint was then drained with a cigaret drain from side to side.

Following this operation the child stayed in the hospital nineteen days. The wicks were removed from the wound on the ninth day, although a slight amount of discharge persisted. The father took the child home from the hospital against advice on the nineteenth day after operation, with the leg in a plaster cast.

CASE 3. Girl, age 6 months, July 12, 1909. Child gave a history of pneumonia five weeks previously, with discharging ears following three weeks later. Two weeks ago the mother noticed that the left leg was swollen from the hip to the foot. Some mottling of the skin, which passed away in a few days. Hip on left very sensitive. Temperature has been normal except that it would occasionally go to 101 in the afternoon.

The physical examination showed a well developed and nourished infant, with a large swelling over the left hip joint, and extending into groin, which fluctuated. No redness, but very tender. All motions at hip restricted and painful. The temperature was 101.8, pulse 155, respiration 55. The next day the child was operated on. An incision 2 inches long was made just anterior to the trochanter, and the abscess opened. About three ounces of greenish yellow pus evacuated. The capsule was found perforated, and in the capsule a loose piece of cartilage was found, which seemed to be the head of the femur. This was removed. A counter incision was made behind the trochanter and the cavity washed out with salt solution. Rubber tube drain. Culture pneumococcus. The child made an uneventful convalescence, and went home two weeks after the operation with some discharge still persisting from the wounds.

A month later the child was again admitted to the hospital for an abscess in the region of the right hip joint, which seemed to be superficial. This was opened and evacuated, and the child was discharged home four days later.

CASE 4. C. E. L. Age 67, male. Was seen in consultation with Dr. L. B. Clark of Waverley, Mass. Patient had had pneumonia for the past two weeks. The day before the onset of the pneumonia he fell on his right shoulder. The past nine days the shoulder has been swollen and tender, and has been getting worse. The temperature has been irregular, and the past two days the hand and arm have become swollen and edematous.

Examination showed the shoulder joint tense and fluctuating, with the swelling extending down on

the back to the tip of the scapula, where there was a slightly reddened area. A trocar was introduced at this point and pus obtained. Following this the opening was enlarged, and a counter opening was made in front of the joint. Eight to ten ounces of pus were evacuated, and a large drainage tube was inserted.

Following this opening there persisted very profuse discharge, necessitating dressings twice a day for a period of about six weeks, at the end of which time the patient died. After death an examination of the shoulder joint showed extreme disintegration of the cartilage. During life there was great pain on attempted motion, and grating or crepitus could easily be felt. No bacteriological study was made in this case, but it seemed certain that the infection could not be anything other than the pneumococcus. The x-rays of the joint were not very suggestive of destructive processes, and comparison with the well shoulder showed no very marked differences, in spite of the loss of cartilage and bare bone found post mortem.

CASE 5. G. P., girl, age 2 years, 8 months, 12 days. A pale, poorly developed and nourished child. She had been in the Children's Hospital four times before, and had been for long periods in the Convalescent Home of the Children's Hospital at Wellesley. She was an illegitimate child, bottle fed from the start, and had never been strong.

She was first admitted in March, 1913, at the age of one year. The diagnosis at that time was broncho-pneumonia, splenic anemia and splenic tumor. She was in the wards for a month. Her second appearance was in May a month later, and she remained six weeks, the diagnosis being broncho-pneumonia, anemia, otitis media, and a question of syphilis. Her next appearance was in August, 1914, after she had been on the Boston Floating Hospital, where she was taken for a splenic tumor. She had another attack of broncho-pneumonia, from which she recovered, and was discharged in about a month. Her splenic tumor was meanwhile enlarging, and an operation on it was advised, but on account of the child's poor general condition it was postponed after consultation. On Nov. 20, 1914, after having been in the country at the Convalescent Home, she was readmitted to the medical service on account of poor general condition and splenic anemia. On the 25th of November she had the left ear drum punctured for an otitis media. On the 30th the left knee joint became swollen, hot, painful to pressure and motion. Slight edema of left leg. Condition came on in last 18 hours. The day before it had been noted that when the left leg was manipulated the child cried, but no objective symptoms were present. The left ear has continued to discharge. On the first of December, the next day, she was seen in consultation by the orthopedic staff, and it was noted that there were limited motion, flexion, and slight widening of the condyles. The patella did not float. The temperature had been running between 104 and 105 for about a week. An x-ray was taken of the knee joint, which showed apparent periosteal stripping of the lower end of the femur. She was then transferred to the orthopedic service for operation.

On Dec. 4, 1914, the knee was incised in the region of the internal condyle. About one ounce of creamy pus was evacuated from the joint. The finger in the joint passed posteriorly through a large opening in the posterior portion of the capsule.

Four days later she died from apparently general sepsis.

An x-ray taken of the resected knee joint, post mortem, showed suggestions of the same periosteal thickening along the shaft of the femur as seen in life, but section failed to confirm this, and the condition was probably due to edema of the tissues.

The autopsy the next day showed that the base of the brain was filled with rather thick purulent exudate, which extended along over the cortex. The left middle ear contained a small amount of pus. No communication between the ear and meningeal exudate could be established. The knee joint showed edema of the ligaments and polymorphic infiltration. There were a few areas of necrosis in the attached striated muscles.

Bacteriology. Smears from the heart blood and the knee joint showed the pneumococcus, which failed to grow on culture. Injections of emulsified lung were made into mice to obtain a pure culture, but were not successful.

Diagnosis. Diffuse broncho-pneumonia. Spleen: Fibrous splenomegalia (Banti's disease). Brain: Acute purulent meningitis. Knee: Acute purulent synovitis.

CASE 6. Girl, age 1 year, 9 months, 12 days, Nov. 26, 1914. Child had bronchitis followed by pneumonia seven weeks ago. Still has some cough. Has been losing weight. About five weeks ago, immediately following pneumonia, the right knee and lower thigh have been swollen and tender to touch, so much so that she has not attempted to stand or walk. There has been no redness.

Physical Examination. Fairly well developed and nourished child. Lungs show marked dullness at right apex front and back. Over this area are heard bronchial breathing and moist rales.

Local. Patient cannot stand or walk. The right knee and lower thigh are perceptibly swollen, and she tends to hold the knee in about 60° of permanent flexion. The capsule is under tension, and there is definite fluctuation in the joint. The swelling begins just at the tuberosity of the tibia, and in a fusiform manner spreads about the joint and extends up the lower third of the thigh. There is no redness or heat and no definite pain or tenderness. The patella floats. There is $\frac{1}{8}$ in. increase in circumference of the knee. The temperature was 99. Leucocytosis 23,000. Polymorphs 48%. Lymphocytes 52%.

Two days later the joint was aspirated and a serous discharge was obtained, which on culture was negative. The leg was placed in a plaster cast to fix the knee joint. Five days later the temperature rose to 105 and the next day to 105.4. The joint was then opened under novocain by an incision on the outer side of the joint, allowing the escape of a considerable quantity of cloudy fluid, at first, followed by a moderate amount of yellowish pus. A large piece of fibrin flake of a grayish color was also squeezed out, apparently from under the patella. The joint was not explored further, but was irrigated with hot salt solutions and drained by a rubber tube, which passed into the upper portion of the joint. The temperature immediately fell by crisis. The leg was placed in a plaster trough, which was kept on for thirty days. The wound required daily dressings, but there was never any great amount of discharge. The child's general condition steadily improved, and she was discharged home on the thirty-fourth day with the wound

healed, slight thickening about the joint capsule and good motion in the knee joint, which promised to become normal. The pus from the knee joint at the time of the operation showed pure pneumococci. A later culture was taken in an attempt to differentiate the strain or type of the pneumococcus, but the culture proved to be so contaminated that the attempt was abandoned.

X-rays taken of the two knees for comparison before operation and several weeks after, were to all appearances alike. About the joint there was a cloudy appearance as of a swollen capsule, and some indistinctness of bone, but no evidences of bone or cartilaginous involvement, either early or late. The epiphyses were normal.

The extraction of the fibrin flake was of interest, and apparently is a usual condition to be expected in joints infected with the pneumococci. The cocci apparently find lodgment in such flakes, and they should always be expressed by squeezing or by careful extraction if possible so as not to break them up any more than possible.

To sum up, these six cases represent various methods of infection by the pneumococcus, namely:—

1. From the mouth by way of a tooth infection.
2. By trauma without previous known pneumonia.
3. By a previous pneumonia followed by an otitis media.
4. By trauma followed by pneumonia and involvement of the joint in nine days.
5. Following several attacks of bronchopneumonia and immediately after an acute attack of otitis media.
6. Involvement of joint two weeks after an acute attack of lobar pneumonia. This case represents the only typical one.

All these cases had the diagnosis confirmed bacteriologically except Case 4, which, however, I included in this series on account of the improbability of its being anything else. The fluid in all these cases was rather thin and greenish yellow when the joint was first opened, but as it continued to drain at the time of the operation the heavier pus escaped. It was during this period that the fibrin flakes were expressed. The mortality was three out of six cases, 50%. The joints, so far as I have been able to determine, are practically normal in the two cases I have been able to follow.

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Clinical Department.

A PRELIMINARY REPORT OF THE RESULT OF WASSERMANN TESTS AS REPORTED FROM DIFFERENT LABORATORIES, CALLING ATTENTION TO A LITTLE NOB ON THE FRENUM OF THE UPPER LIP, WHICH MAY OR MAY NOT BE CHARACTERISTIC OF SYPHILIS.

By O. D. Phelps, M.D., WORCESTER, MASS.

For the past year the writer has had Wassermann tests done both for diagnosis and as check up for treatment by several different laboratories. Almost every salvarsan administered is accompanied by a Wassermann test; this is the routine on every patient. Each laboratory receives a specimen of the serum for examination, taken at the same time and kept under the same conditions and each laboratory examines the specimen on the same day.

Most specimens here submitted have been to three laboratories, many to four, many to two and a few to five. The result of 358 specimens tabulated for this consideration is as follows:—

FOUR LABORATORIES.

Of 113 bloods—68 agree; 45 disagree.
60.2% agree.
39.8% disagree.

THREE LABORATORIES.

Of 135 bloods—70 agree; 65 disagree.
51.9% agree.
48.1% disagree.

TWO LABORATORIES.

Of 110 bloods—72 agree; 38 disagree.
65.5% agree.
34.5% disagree.

In view of the above table, one might well ask the reliability of the test. The varying results reported in literature of blood from different laboratories and a chance difference in the report of a Wassermann in the experience of the writer are what stimulated this comparison. The table simply shows the delicacy of the test and how susceptible it is to variation in technic, and to differences in the blood as taken at different times.

Craig, working for the most part in the Government Laboratories of the U. S. Army at Fort Leavenworth, Kansas, finds that the only other diseases aside from syphilis which may cause a Wassermann to be positive are yaws, leprosy, relapsing fever, and febrile stage of certain malarial infections.

It is a fact that a positive Wassermann test done in a reliable laboratory and confirmed by a second examination is diagnostic of syphilis. As to a negative Wassermann very little reliance

can be placed on a single test. In early primary syphilis when the diagnosis is most needed, the reaction is often negative. The secondary stage is the one in which the Wassermann is most often positive.

The writer has observed the phenomenon of a Wassermann being reported negative in a case and the same to be reported strongly positive shortly after with no apparent reason.

Alcohol seems to have a distinct effect on the Wassermann reaction, in rendering it negative. A patient of the writer was seen in 1911 with an unmistakable macular rash, extending over face, chest, abdomen and extremities. The patient was accustomed to use beer constantly and each Wassermann report was negative. During all of his treatments, which have been more or less consistent up to last summer, but one out of several Wassermann tests has ever been positive. He yielded very nicely to salvarsan and mercurial treatments, but during his whole course we have been unable to depend on the Wassermann test to check up his progress.

For some time the writer has been observing a little tab, a nob on the frenum of the upper lip of patients. So far as known, nothing has been written of it, and it is probable that the nob is found as frequently among non-syphilitics as syphilitics.

The following observations have been made from 359 cases.

	Present.	Absent.	Present.	Absent.
	%	%	%	%
S-1	17	6	73.9	26.1
S-2	37	28	56.9	43.1
S-3	94	51	64.8	35.2
Total S's	148	85	63.5	36.5
U	48	21	60.5	39.5
Total G-U	196	106	65.0	35.0
Misc.	41	16	72.0	28.0
Total obser....	237	122	66.0	34.0

NOTE. S-1, S-2, S-3, denotes Primary, Secondary and Tertiary Syphilis. U refers to Urethritis.

Pathologically the nob is reported connective tissue covered by epithelium.

THE FEMUR OF AN IDIOPATHIC EPILEPTIC.

By J. S. FOOTZ, M.D., OMAHA, NEBRASKA.

Professor of Pathology, Creighton Medical College, Omaha, Nebraska.

As the pathology of idiopathic epilepsy is obscure, the following case is interesting and suggestive:—

Male, age 40, giving a history of epilepsy from childhood, had been under observation for some years in one of our state institutions. On the day of his death he had twenty convulsions.

A three-inch middle piece of the femur was obtained for microscopical examination. After boiling the bone until the medullary contents were removed, a section through the middle of the piece was ground

to proper thinness and mounted. A drawing of the section was then made with the Edinger apparatus and appears below.



Section through the middle of the femur of an idiopathic epileptic. age 40.

The wall of the bone varied in thickness from 1 mm. to 2 mm. The medullary surface was finely reticular, and the canal was filled with friable matter. The medullary index or ratio of the medullary canal to the bone was 277%. The average index of 139 other human femora was found to be 38%. The bone was extremely light and, in places, translucent.

Structure: The external circumferential lamellae were fragmentary. The narrow central ring was composed of small, irregularly shaped Haversian systems, some of which were senile.

The internal circumferential lamellae formed a narrow fragmentary ring around the medullary canal, indicating that the wall of the bone had never been any thicker.

The case is presented merely to call attention to the osseous system in idiopathic epilepsy.

Reports of Societies

TRANSACTIONS OF THE THIRTIETH ANNUAL MEETING OF THE ASSOCIATION OF AMERICAN PHYSICIANS.

HELD AT WASHINGTON, D. C., MAY 11, 12 AND 13, 1915.

(Concluded from page 385.)

Wednesday afternoon, May 12.

41

"The Significance of Acroataxia and Proximal Ataxia of the Extremities in Differentiating Between Disease of the Peripheral Nerves and Spinal Cord Disease." By C. F. HOOVER, Cleveland, Ohio.

In a former communication it was shown that in ataxic states of the extremities two varieties may be differentiated: one in which the distal muscles are involved, called acroataxia; another in which the proximal muscles are involved, called proximal ataxia. In a case of primary anaemia, stereognosis was preserved and no ataxia in the ordinary sense was observed; but extreme ataxia of the intrinsic muscles of the hands and feet was found. In 53

further cases of primary anaemia at the Lakeside Hospital acroataxia has been noted, with proximal ataxia added as a late manifestation. In lead and alcoholic ataxia, however, the relation of the time of appearance of the two forms is reversed.

In spinal cord disease, proximal ataxia appears much sooner than acroataxia: in the ataxia of the anaemic type, on the other hand, no Romberg sign may be elicited because the ilio-femoral muscles are not involved.

In a case of diabetes with apparent diabetic neuritis, the presence of proximal ataxia without acroataxia was noted; examination of the spinal fluid revealed tabes as the cause and the ataxia improved under anti-syphilitic treatment.

The writer has been able to diagnose primary anaemia in patients over 50 by the presence of acroataxia and loss of vibratory sense independent of blood examination. In a man with an obstructive prostate there was a proximal ataxia without acroataxia. The spinal fluid being normal, the diagnosis of cancer of the prostate with metastasis in the cord was made and confirmed.

In a case of apparent primary anaemia, with a mass in the left hypochondrium, there was loss of reflexes and proximal ataxia without acroataxia; the diagnosis of hypernephroma with metastasis in the cord was made and confirmed.

42

✓ "The Present Status of Hygiene or Public Health and its Future in America." By W. W. Fonn, Baltimore, Md.

The growing demand for public health officers and for public instruction in hygiene makes it necessary to formulate the underlying principles which should be considered in meeting this demand.

Pettenkofer founded the science of public hygiene and in Germany and Austria his teachings received ready practical application, spreading thence largely all over Europe. As a result of his campaign the mortality from zymotic diseases fell. The great fruits of this work ripened in the decade 1870-1880, but with the advent of bacteriology Pettenkofer's work had a set back. Bacteriology became hygiene for a time, until lately when Pettenkofer's plan has been revived, modified by bacteriology.

In Great Britain, since the sanitary laws of 1848, public health matters have been on a sound basis, but the emphasis has been on public works, such as water supplies, drainage, sewage disposal, etc. Preventive medicine is the gift of France, but it has been twisted by the work of the Pasteur Institute. Thus it may be seen that the science of public health has been prominent and in the public consciousness of European countries for many years, and the subject is a major matter in the universities of Germany, Austria-Hungary, Great Britain and France. But it is still neglected in this country and chaotic ideas on the subject prevail. The Departments of Health in states and cities have long recognized the needs of the situation, but the national government still lags behind, notwithstanding the work done by the Public Health Service.

In the medical schools, teaching of hygiene was begun at the Woman's Medical College of Philadelphia in Pettenkofer's time. The subject has gradually appeared in the curricula of all medical schools but at this time it is a major subject in only five universities; a pitiable condition as compared with the situation abroad.

43

"The Alleged Relation Between Vaccine Virus and Post-Vaccination Tetanus." By JOHN F. ANDERSON, Washington, D. C.

Since 1903 the public health service has supervised the manufacture of and commerce in biological products. Among other things, it has conducted an investigation of the occurrence of tetanus following vaccination. Since 1904 the writer has studied this subject and the paper gives a summary of results.

There were four lines of study:

1. Study of actual cases, by personal investigation or by a delegated officer, with collection of data upon incubation period, kind and source of virus used, collateral circumstances, etc.
2. The incidence of tetanus among large groups vaccinated at the same time: army, navy, etc.
3. Examination of commercial vaccines for the presence of tetanus bacilli or spores.
4. Laboratory observations on animals vaccinated with virus infected with tetanus.

1. Forty-one cases of post-vaccination tetanus were studied. In no cases were tetanus spores found in virus from same stock as that used for the vaccinations. The incubation time was 9 to 30 days: mortality about 75%. The mortality was less in cases with incubation time of 10 days.

2. Among 385,000 persons vaccinated in U. S. Army there were 6 cases of tetanus, none of which had any relation to the vaccination.

Among 900,000 persons vaccinated in U. S. Navy there were two cases of tetanus having no relation to vaccination.

3. Examination was made of enough virus to vaccinate 200,000. In no single instance was tetanus found.

4. Animals were vaccinated with virus containing large numbers of tetanus spores. Rhesus monkeys and guinea pigs, animals susceptible to both vaccine and tetanus, all escaped tetanus although the vaccination crusts sometimes contained spores. This fact leads to the belief that there is no danger even if virus does contain spores.

The conclusions reached:

1. Vaccine virus on the market does not contain tetanus spores.
2. Tetanus following vaccination depends upon accidental infection at the time of crust formation.

44

"Recent Application of Chemotherapy with Special Reference to the Action of Emetin Upon Endameba Buccalis, the Specific Cause of Alveolodental Pyorrhea." By C. C. Bass, New Orleans, La.

It has been shown that the endameba buccalis is present in the lesions of all cases of Riggs' disease. This endameba can not be cultivated *in vitro*; it is necessary, therefore, to judge the effect of drugs upon the organism by observations on living individuals. The destructive effect of emetin on cultured amebae was demonstrated by Rogers, and he thought that the same effect could be demonstrated on pathogenic amebae.

The writer has evidence that emetin does poison endameba buccalis. The drug will kill living tissue cells if they are exposed long enough to a strong solution. If introduced into the blood stream of animals in sufficient dosage death follows. The minimum lethal dose in man is thought to be 6

grains intravenously. In determining dosage it is necessary to come well within safe bounds: one tenth the minimum lethal dose should be regarded as reasonably safe. Such a dose is sufficient to kill endamebae when exposed to that concentration in the serum. When emetin is used in half grain doses in Riggs' disease, endamebae disappear with varying rapidity; a few disappear after the first injection; a larger number after a second, and with increasing rapidity after repeated doses. Some cases are very resistant. Positively cured cases are hard to demonstrate but they may be free of amebae for months. Reinfection takes place in some cases.

The food of endameba buccalis seems to be a certain cell to be found at the bottom of pus pockets; the lesions are probably produced by the efforts of the amebae to reach these cells and by the destruction of the cells. Emetin may produce its effect by interfering with the food supply of the amebae.

45

"Studies on Uric Acid Metabolism in Gout." By JOSEPH H. PRATT, Boston, Mass.

Folin first described a trustworthy method of estimating the uric acid in the blood. In 1913 the writer reported uric acid estimations in 9 cases of gout: since then he has had 7 additional cases under personal observation and has studied the blood. The disease is a rare one in this country; his cases had been few and no general conclusions could be offered. Some facts are offered, however.

On purin free diet, the average uric acid content of the blood of gouty patients was 3.7 mg. per 100 gm. blood. In normal individuals, on mixed diet the uric acid average is 1.8 mg. per 100 gm. blood; 2.5 mg. is the upper level in normal persons.

One cannot make the diagnosis of gout from a single examination of blood, because the uric acid in the blood may be normal at times in gout.

A single high uric acid finding is not sufficient for the diagnosis of gout, because it may be high in other diseases, even as high as 5.0 mg. per 100 gm. blood.

The blood of patients on rich purin diet has been studied; the sweetbread meal was used. One patient whose blood uric acid was 1.6 mg. (lowest in the literature) on the fourth day reached 4.0 mg. per 100 gm. blood.

There was a variable behavior in different cases: after the sweetbread meal there may be a drop in uric acid for a day or two, with later a sharp rise. In healthy persons there is a distinct rise in four hours after the meal.

It could not be suggested that the method will have any diagnostic value.

46

"Open Air Treatment of Pneumonia and Anemia in Children." By ROWLAND C. FREEMAN, New York, N. Y.

The paper gives the results of fresh air treatment of small children in Roosevelt Hospital. The best results, compared with controls in the ward, were in cold weather. No increase of blood pressure was noted as a result of out door treatment; the most marked results were increased color in cheeks, diminished cough, better sleep. There was reduced spread of contagion; there have been cases of measles on the roof without spread.

Greatest interest centred in three cases of blood abnormalities treated in this way. 1. A child with

simple anaemia (95% hemoglobin), bronchitis, and colitis. Red cell count of 280,000 went to above 1,000,000 in a surprisingly short time. This child had also Syr. Fer. Iodid, but the improvement was out of all proportion to the drug given.

2. A child with leukaemia had rapid improvement of lungs, spleen, and blood.

3. A child with splenic anaemia, showing normoblasts, megaloblasts, 60,000 white cells, etc. Improved rapidly on the roof; relapsed when returned to the ward, and improved again when put out of doors.

Summary of 120 cases of pneumonia treated in open air: 21 cases of uncomplicated lobar pneumonia had normal temperature in 3 days after admission. Mortality of lobar pneumonia cases 4.1%, 31 cases of broncho-pneumonia were normal 7 days after admission. Mortality in this form was 3.4%.

47

"A Brief Note on the Value of Pituitary Preparations (Posterior Lobe) in Acute Lobar Pneumonia." By S. SOLIS COHEN, Philadelphia, Pa.

Ordinarily we expect children under 12 to get well of acute lobar pneumonia, with only good nursing and, of course, open air. But occasionally treatment is required as in the case of a child just over 12, who came into the hospital with pneumonia; there was delayed resolution during which there was a tendency to collapse and it was necessary to use oxygen; this child was much helped by extract of the posterior lobe of the pituitary gland and survived a complicating pneumothorax.

When we find a specific biologic cure for pneumonia we shall be fortunate, but we shall still need to use tactical measures in connection with the general strategy. Pituitary extract will then be a valuable tactical aid. Pituitary substance raises the blood pressure. When we find the systolic pressure below the pulse rate there is danger. And when we find the diastolic pressure approaching the respiratory rate there is danger. In both cases pituitary extract will do good. It will also diminish dangerous tympanites.

Until we find an available specific, we must continue to employ skilfully fresh air, nursing, quinin, pituitrin. Even now, we have more cases of delayed resolution because more live to have it. This is best treated by the use of autogenous vaccines given by mouth.

48

"Magnesium Treatment of Tetanus." By J. AUER and S. J. MELTZER, New York, N. Y.

49

"The Hygiene of Aviators." By GEORGE M. KOKER, Washington, D. C.

50-52

GROUP ON THYROTOTOXICOSIS.

53

"Pathognomonic Changes of the Cerebrospinal Fluid in Nervous Diseases." By JOSEPH COLLINS, New York, N. Y.

Although we do not know the origin of the spinal fluid, we do know something about its alterations in disease.

The fluid has been studied at the New York Neurological Institute in about 20,000 cases. Such examinations are useful in the study of cerebrospinal lesions due to the tubercle bacillus, to the diplococcus meningitidis, to the organism of epidemic poliomyelitis, and to the *spirochaeta pallida*.

We are now able to distinguish between meningeo-vascular and the parenchymatous syphilitic lesions of the central nervous system, takes being the type of the one and paresis of the other.

In 167 cases of tabes, there were 121 positive findings; the remaining cases had had very thorough antisyphilitic treatment. In 140 cases, there were pathognomonic signs in the fluid.

There are three types of tabes from the serological point of view: 1. Typical, classical type; 2. Hyperlymphocytic type, in which the meninges are also involved; 3. A type in which the Wassermann reaction is weak, the globulin contents low, cells number only about 20, and Fehling's solution is not always reduced.

In 85 cases of paresis, 53 were serologically typical: + Wassermann, modified pleocytosis. ++ globulin, + Fehling's solution. A pathognomonic test is the reduction of colloidal gold; this test was positive in every case except one. This reaction was found to occur also in two instances in 27 cases of disseminated insular sclerosis, but in these paresis could not absolutely be ruled out.

Treatment affects the serological findings in both types of central nervous syphilis; many reports and histories of cases from hospitals in this country give no statement as to the effect of treatment on the fluid.

54

"Further Observations on Pain in Diaphragmatic Pleurisy." By JOSEPH A. CAPPS, Chicago, Ill.

Pain as symptomatic of pleural lesions had been studied by mechanically irritating the membrane in thoracentesis operations. The visceral layer is not responsive to pain; the parietal pleura is very responsive to irritation and sense of location is precise; the diaphragmatic pleura is sensitive but the pain is referred from the marginal area to the abdomen, from the central area to the neck. This experimental work has been supplemented by clinical observations on diaphragmatic pleurisy; 32 cases of simple pleurisy, 29 of pleuro-pneumonia. There was referred abdominal pain in 54 cases, of the same character as that produced experimentally. A phenomenon not noticed in experiments was that in 50% of the cases the point of maximum pain corresponded with the point of maximum tenderness to pressure. The most common points of referred pain in the abdomen are above and to the right or left of the navel.

There was referred neck pain in 31 cases. This had the same characteristics as the abdominal pain; the painful spots appear mostly along the ridge of the trapezius. In the neck the points of maximum pain and tenderness always coincide.

Nine of the cases were at first diagnosed appendicitis; two were operated with negative findings. Six were called cholecystitis, two operated with negative findings; two were called ulcer of stomach, one operated; two, abscess of liver, one operated; one, renal calculus; one, lumbago; one, abdominal inflammation of uncertain character.

Differential diagnostic criteria are given. Subphrenic inflammations give rise to direct pain as well as to referred abdominal pain; the neck pain

gives no evidence as between sub- and supraphrenic inflammation.

Thursday morning, May 13.

55

"The Presentation of a Case of Herter's Infantile." By M. HOWARD FUSSELL and W. B. BRAMLETT, Philadelphia, Pa.

In 1908 C. Herter reported five cases characterized by chronic gastro-intestinal intoxication, with retarded skeletal growth; there were present intestinal disturbances, a mild anemia, and atrophy of all the tissues of the body. The disease was believed to be due to a persistence of the infantile type of intestinal flora. It is not known whether the intestinal bacteria are responsible for the fact that calcium is not absorbed but is lost through the intestinal canal in the form of soap. The only effective treatment is dietetic; proteins are borne best; carbohydrates, worst. It was found that gelatin is the best form of proteid, as it does not give rise to putrefactive products.

Fussell's case was given the following dietary: Breakfast, milk, gelatin, and one soda cracker; lunch, 6 oz. milk, gelatin and two soda crackers; dinner, straight beef, beef juice, and green vegetables. The child was nine and a half years old; 34 inches high; weight, 24 pounds. It had been treated for all sorts of conditions and was admitted to the hospital as a case of nephritis. Albuminuria cleared up with rest and diet. Wassermann negative in blood and spinal fluid. Radiographs of the wrists showed a development age of 2½-3 years, according to the Rotech standard; this corresponded to weight, height and eruption of teeth. The temperature was elevated until put on the diet. There has been no change in the wrist bones, but the child is heavier, fatter, and stronger; it laughs, talks, and runs about; it has gained an inch and a half in height and 12 pounds in weight.

56

"Clinical Studies of Several Types of Acute Leukaemic States." By L. F. BARKER and W. A. BARTJER, Baltimore, Md.

The studies cover 21 cases of acute leukaemia recently under treatment. The disease is recognized to be not only a change in the total cell count but also a specific change in the blood-making organs. Acute and chronic forms are seen: the acute cases die early as a rule; those of the chronic variety live longer. The chronic cases may begin with acute manifestations, or the disease after a long chronic course may have an abrupt acute termination.

The acute cases are more often recognized now because the blood is oftener studied. They are sometimes mistaken for acute sepsis, but in any such cases associated with stomatitis and hemorrhagic diathesis, acute leukaemia should be suspected. It is necessary for diagnosis to consider both the clinical course and the blood. The exact type may require post mortem histological study for classification. There may be at the beginning and end not a leukaemia but a leukopenia. Cases, with blood pictures, are given in detail.

57

"Colloid Carcinoma of the Peritoneum." By THOMAS MCCRAE and W. M. L. COPLIN, Philadelphia, Pa.

The case was presented on account of the unique pathological and clinical pictures it furnishes. The patient was a man who for 4 years suffered from ascites; there were no diagnostic evidences available until the end of the 3rd year when fluid withdrawn by tapping was found to contain colloid material resembling tapioca grains. In the last month of life freely movable tumors could be felt in the abdomen. A terminal symptom was obstinate diarrhea; food taken could be recognized in the stools 3 or 4 hours later. The salient features were: the presence of a marked ascites for 4 years with preservation of excellent health; the finding of colloid material in the ascitic fluid; the development of movable tumors. (Presented by Dr. McCrae)

Dr. Coplin exhibited photomicrographs of the tumors. The interesting feature was the retrogression of the epithelial inclusions with the production of colloid.

58

"Spontaneous (Non-Tubercular) Pneumothorax." By ELSWORTH SMITH, St. Louis, Mo.

59

"Observations by Krogh's Method of Blood Flow in Human Subjects." By J. H. MEANS and L. H. NEWBURN, Boston, Mass.

The observations were undertaken to determine the effect of caffeine on blood flow. The method of Krogh and Libhard was used. Figures and tables are given setting forth the details of the work.

The average coefficient of utilization of oxygen is 41%. In trained athletes the coefficient is higher than normal, showing that the circulation is very economical. In a case with double aortic and mitral disease the coefficient was found to be normal. Normal subjects at rest when treated with caffeine sodio-salicylate were found to have a great increase of blood flow without increase of oxygen absorption. Under measured work, the increase of blood flow and oxygen utilization is parallel. Caffeine caused no marked change in this. In work, the increased demand for blood is met first by increased ventricular output up to a certain point when increased pulse rate takes up the additional burden.

60

"Aleukaemic Lymphadenosis." By T. B. FUTCHER, Baltimore, Md.

The patient was a single woman, aged 58. Her symptoms were dyspnoea and weakness with enlargement of axillary, cervical, inguinal and post-peritoneal glands. The blood count found 7,000 leukocytes, 67% of which were large and small lymphocytes. The heart and kidneys were normal. Diagnosis rested between Hodgkins' disease and an atypical leukaemia. The leukocytes during her stay in the hospital ranged between 7,000 and 14,000 in number; large and small lymphocytes constituted from 67% to 90%. Wassermann and tuberculin reactions were negative. A gland was removed: cultures were negative; histologically, it showed a chronic lymphadenosis, resembling lymphosarcoma. Hodgkins' disease was not simulated. Treatment with cacodylate of soda resulted in clinical improvement but did not improve the blood. There is now a metastatic nodule in the eyelid. The case must be regarded as one of Naegeli's aleukaemic lymphadenosis, in which there is no change in the total white cell count, but a great change in

the differential picture. The disease is very chronic and is characterized by a tendency to the development of metastases in the skin. The course may abruptly become acute with an early fatal termination.

61

"The Condition of Patients after Partial or Complete Resection of the Colon." By J. C. BLOOMGOOD, (by invitation), Baltimore, Md.

Comparison is made between two groups of cases in which resection of a small portion of the ileum and the right colon to the transverse portion has been done. 1. Those cases in which the operation was done for local disease, ulcer or cancer; 2. Those in which the resection was done for a more general condition, i. e., thinning of walls, dilatation, atony.

As to immediate results: in resection for local disease the patients are apt to have diarrhea for a few months; in resection for the general condition, the remaining colon being abnormal, there is no diarrhea. In local disease cases, bladder irritation accompanies the diarrhea and disappears with it. Bladder irritation does not occur after resection in the atonic cases. Cases in which the operation was done for local disease have never come for secondary operation. When resection was undertaken for the atonic disease, the same technic which had been satisfactory formerly was chosen in the first cases.

Out of 28 personal cases of the atonic type, 16 are well: that is to say they have gained weight, required no cathartics, have no indigestion, no adhesion pains, etc. The convalescence is slow, (it is rapid after ulcer and cancer cases) and may require 2 years. The majority of the cases are women and are able to do their own house work.

After four years' observation of resection in cases of atonic disease and seven years observation of local disease cases, it is evident that removing the right colon does no harm.

What of the failures in the atonic cases? Seven were failures in that they had post operative discomfort and pain. Reoperated cases indicate that the failures were due to the use of side to side anastomosis; the two blind extremities become tense and painful diverticula; this does not happen in ulcer and cancer cases. In the last three cases end to side anastomosis has been employed.

The paper does not discuss the justifiability of the operation, but undertakes to show that no harm results from resecting the right colon; and that the technic of the operation in atonic cases must be especially careful.

That resection has an effect on the atony is shown by a case in which there was vomiting, with food retention in stomach and stasis in colon; 18 months after the operation there was no vomiting and there was hypermotility of stomach and colon. All of the atonic cases had been referred by medical colleagues; all had been treated thoroughly; all other means of relief had been tried and had failed. All of the 16 successful cases are much improved; but they are not robust. Their atony is a terminal condition which might have been prevented by proper medical treatment.

62

"The Fate of Fats in the Blood Stream." By WM. CHARLES WHITE, Pittsburgh, Pa.

Light fats were injected into the blood stream

in an effort to learn why tubercle bacilli lodge preferably in the upper lobes of the lungs. Cream was injected into the ear vein of rabbits. It is rapidly set aside into the lymphatics and concentrated in the cisterna chyli. There was no evidence that any of the fat was conveyed into any of the organs by the blood vessels. All of the fat is held up in the pulmonary circulation and it does not get out again into the peripheral circulation. It is found later not only in the depots of fat but also outside the central veins in the lobules of the liver. Suggestion is made of a lymphatic circulation in the liver connected with the cisterna chyli.

63

"An Unusual Type of Pulmonary Mycosis." By THOMAS R. BOGGS and M. C. PINCOFFS, Baltimore, Md.

The case was one of a mycotic lung infection not heretofore reported in the United States. A native American girl, a corn scraper in a canning factory, sought relief for a boil-like lesion under the arm. She was found to have cancer of the breast on the same side; there was weakness, numbness and tingling of the arm, evidences of circulatory obstruction in the axilla. Operation for breast cancer and axillary condition was done; no evidence of pulmonary disease was noticed. Later she entered the City Hospital febrile, prostrated and with profuse expectoration of sputum resembling that from liver abscess. In the sputum were found mycelium and spores. The course was rapidly downward; on the fifth day hemoptysis occurred, cough ceased and later hemorrhage from axillary sinus marked the end. Autopsy revealed cavity communicating with pleura and sinus; the lung was in organized grey hepatization.

The organism grew abundantly on culturing and was found to be a moniliform yeast. It is pathogenic to animals when inoculated and when given intratracheally; not when given by mouth. It is easily overlooked in the sputum by ordinary staining methods; it is necessary to culture by the plate method to recover the organism.

64

"Studies in Moniliasis of the Digestive Tract in Porto Rico." By BAILEY K. ASHFORD, San Juan, P. R.

(Similar paper, *Journal A. M. A.*, June 5, 1915).

Clinical and pathological examinations have shown a close connection between sprue and the use of diseased yeast and undercooked bread. A monilia, differing from monilia albicans, has been grown from the tongue of patients suffering from sprue in 100% of the cases examined. It has been grown from the tongue of patients with suggestive histories of sprue in the past in 21% of the cases. In 31 cases free of symptoms or history of sprue, only one yielded the monilia from tongue culture. The organism has been found in cases of so-called thrush, in many cases of ill-defined illness characterized by fermentative dyspepsia, and in 100% of cases of true sprue; these facts lead to the suggestion that there exist tongue sprue, intestinal sprue, and a combination, complete or true sprue.

The monilia in question has been found in the centre of loaves of bread; the baker's yeast in Porto Rico is subject to variations from type; sprue is a

disease of urban communities where bread is eaten, being extremely rare in rural districts where bread is not a part of the dietary. Dr. Gonzales Martinez has devised a complement fixation test which has been found specific in many cases of sprue. Sprue is controlled, and in many cases cured, by the use of a non-carbohydrate diet, in which the monilia will not grow.

Book Reviews.

Encyclopedia Medica. Second edition, under the general editorship of J. W. BALLANTYNE, M.D., C.M., F.R.C.P.E. Vol. I. Edinburgh and London: W. Green and Son, Ltd. 1915.

This volume opens the publication of the second edition of one of the leading standard medical encyclopedias. The general plan of the work and the mode of arrangement of the articles which characterized the first issue have been retained as far as possible. In the first volume, which includes the subjects from abattoirs to asphyxia, many new articles have been added on such topics, for example, as acidosis, acromegaly, adenoids, amebiasis, ankylostomiasis, ante-natal pathology and ascites. Many new drugs have also been discussed, including those appearing in the British pharmacopeia of 1914. In the subject of anatomy there is presented a critical discussion of the Basle anatomic nomenclature, with an elaborate table giving in parallel columns the old terminology, the Basle terminology, and a suggested English equivalent for the latter. This table should be of especial value to teachers and to practitioners who are endeavoring to replace their old terminology by the new, and who prefer English phraseology to the Latin terms of the Basle nomenclature. For the present the old anatomic terms have been retained in the text of the encyclopedia, but it is suggested that in a future edition these may be wholly replaced by the B. N. A. terms. The present article is a valuable aid in establishing the transition during this period of anatomic interregnum.

Naturally many new authors appear in this edition, men for the most part of international eminence in the British profession. Where older work has been retained it has been thoroughly revised. The volume is illustrated with a number of excellent text figures and full page plates, several of the latter being in colors. At the close of many of the articles is presented a bibliography on the subject in question. The first volume presents abundant promise for the continuation of an important and valuable work of medical reference.

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EDUCATION AND EUGENICS.

IN the issue of the JOURNAL for August 26, we commented editorially on some of the eugenic, or rather dysgenic, effects of modern methods of warfare. Two writers in recent issues of a contemporary daily publication* have similarly commented on the dysgenic effects of certain modern educational and social movements. Without reviewing the entire scope and bearing of these movements, it may be of interest to discuss briefly, in the light of previous evolutionary experience, the possible result of some of these influences on the future of human civilization, limiting the consideration to those proceeding from the so-called higher, or collegiate, education.

Without discussing exact statistics, it may fairly be acknowledged that, with the notable exception of certain families, collegiate education, among both men and women, appears to lead to a marked decrease in racial fecundity.

Probably this is because the various recognized factors of decreasing fecundity among civilized peoples operate more intensely upon the highly educated than upon others. These influences at present seem to affect college-bred women even more than men, possibly because of their more limited reproductive period and their greater temptations away from marriage.

In an article in the *Journal of the American Statistical Association* for June, 1914, Nellie S. Nearing concludes as follows her investigation of the then available marriage statistics of the women graduates of colleges in America:—

"The decade 1890 to 1899 is undoubtedly the most fairly representative (as respects marriage rates). On the one hand, it falls within the epoch which accepted college education for women and looked upon it as thoroughly respectable. On the other hand, the graduates in the latest graduating class (class of 1899) are now at least 35 years of age. The marriage record of the decade is therefore fairly complete.

"The eight colleges graduating more than 100 students each during the decade (Earlham, Swarthmore, Wilson, Indiana, Vassar, Radcliffe, Wellesley and Bryn Mawr), show fairly uniform marriage rates. The lowest is Bryn Mawr, 41.8 per cent. (294 graduates), and the highest Swarthmore, 58.7 per cent. (148 graduates). It is probable that the marriage rate for this decade is fairly representative of the tendency in the modern women's college world."

Moreover, the average fecundity of married college graduates is low. Let us quote only two examples from the paper of the authors above mentioned:—

"The marriage rate of Yale graduates had declined to 66.3 per cent. for the period 1867-86, a period long enough to furnish a basis, and Prof. William B. Bailey, the statistician, has calculated from the class records that the average number of children born to the married graduates of these classes when all their families are complete is 2.3. (*Yale Review*, November, 1908, p. 337).

"The graduates of 1870-89 at Vassar and of 1880-89 at Wellesley numbered 1277, and had borne by 1912, when the members of the youngest class would average 45 years of age and their families be complete, a total of 1197 children, or 93.7 for each hundred graduates.

"So that every hundred Yale graduates produce 152.5 children and every hundred Vassar and Wellesley graduates produce 93.7 children."

Whatever the causes, the fact seems to remain that, for better or for worse, the members of the more highly educated class in America are barely holding their own genetically, cer-

* Boston Herald, Aug. 29, 1915, page 6, and Sept. 6, 1915, page 7.

tainly not showing the normal reproductive increase, probably being steadily eliminated racially and replaced by newer stocks without an ancestry of education.

From this phenomenon the authors draw most gloomy eugenic conclusions. The best stock is constantly perishing and being succeeded by the less worthy. There thus tends to be established "an unnatural selection of the fittest to die and the unfittest to survive."

Doubtless these are indeed considerations to give us pause, yet perhaps the situation is not so serious as it may appear. One crux of the question lies in the definition of fitness. Fitness to survive is not a matter of intellectual, physical or moral qualities alone, but of that combination of the three which happens to be best adapted to meet the conditions of existing environment. Successful racial, class or family fecundity is therefore dependent on qualities belonging to all these groups. Now, as man, like all other forms of life past and present, pursues his evolutionary course, he is constantly encountering new environmental conditions, and in the process of adaption to these conditions, it is inevitable that many, often otherwise highly valuable and efficient stocks, should perish, until that one has been selected to survive which can best meet the new demands. This may seem wasteful, but the infallible natural method seems to be one of ultimate conservation though apparent prodigality.

Education is one of the more recent of these newer environmental conditions which the human race has encountered, and we are now witnessing the process of selective adaptation thereto. The process is perilously destructive, but those who are in the forefront of battle must expect the highest casualties. Doubtless many stocks of high arboreal efficiency perished in the transition to the erect bipedal terrestrigrade habit. Ultimately the transition was successfully made and proved worth while, though its physical evil effects are still observable in tendencies to hernia and ptosis. The same will probably prove true of higher education: it is dangerous, but on the whole its advantages will outweigh its disadvantages, even eugenically. In time, probably, only those will survive who really desire offspring, and the superior conditions and heredity which such persons, as parents, are likely to provide for their descendants, may prove an immense and controlling evolutionary advantage.

Lamentable though it may appear, racial experience indicates that the constant perishing of valuable stocks is not an irretrievable calamity. This is the price of evolution, as "blood is the price of admiralty." Through all past time, natural process has succeeded in steadily advancing the quality of its product from crude material. For though the fine stock may perish as such, its achievement for the race is not necessarily lost. Each generation of mankind, whatever its discrete eugenic or dysgenic antecedence, is still collectively

"Heir of all the ages
In the foremost files of time."

TUBERCULOSIS CONFERENCES.

It is announced by the National Association for the Study and Prevention of Tuberculosis that a series of five sectional conferences has been arranged to take place during the coming fall. These conferences will be held respectively at Indianapolis, Ind., El Paso, Tex., Columbia, S. C., Springfield, Mass., and Albany, N.Y. The chief subjects for discussion at each will be the various methods of carrying out more effectively both by physician and by the laity the national movement for the control and suppression of tuberculosis.

"The Indianapolis meeting, to be held September 29th, 30th and October 1st, will be known as the Mississippi Valley Tuberculosis Conference and will include the states of Ohio, Indiana, Illinois, Michigan, Wisconsin, Kentucky, Tennessee, Arkansas, Missouri, Iowa, Minnesota, Kansas, Nebraska, South Dakota, North Dakota, Montana, Wyoming and Colorado.

At El Paso the Southwestern Health Conference will meet September 27th to October 1st and will discuss not only tuberculosis, but other health subjects. This conference includes Texas, Oklahoma, New Mexico, Arizona, California, Nevada, Utah and Colorado.

The Southern Tuberculosis Conference at Columbia will meet October 8th and 9th, and will devote considerable attention to the problem of the tuberculous negro. The states included in this group are Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Virginia and West Virginia.

The New England Tuberculosis Conference will embrace the six states of Maine, New Hampshire, Vermont, Massachusetts, Connecticut and Rhode Island. This conference will be held on October 22nd and 23rd.

The North Atlantic Tuberculosis Conference will be held at Albany during the week of November 1st. It will take in the states of New York, Pennsylvania, New Jersey, Maryland, Delaware and the District of Columbia."

The New England Conference, which is the second to be held in this district, is to be under the immediate administration of the Massachusetts Anti-Tuberculosis League, and a cordial invitation is extended to all physicians to attend the sessions and take part in the discussion. The purposes of the conference are to bring together anti-tuberculosis workers, to discuss matters of special interest to the New England States, and to bring the facilities and aid of the National Association for the Study and Prevention of Tuberculosis more closely to bear on the problems involved. The following is a preliminary tentative program of the sessions of the New England Conference. The complete program will be published in a later issue of the JOURNAL.

FIRST SESSION.

Programs of Anti-Tuberculosis Work.

1. For cities of 100,000 or over.
2. For cities of less than 100,000.
3. For small towns and country communities.

SECOND SESSION.

Red Cross Seal Sales Methods.

An informal discussion will take place at a dinner session.

THIRD SESSION.

Industry and Tuberculosis.

1. The medical examination of employees.
2. Employees' relief and aid associations.
3. Insurance against tuberculosis.

FOURTH SESSION.

Methods of Anti-Tuberculosis Work.

1. Educational methods.
2. Nursing.
3. Dispensaries.
4. Institutions.

FIFTH SESSION.

The Diagnosis of Incipient Cases of Pulmonary Tuberculosis.

1. Lecture on "What the general practitioner should know about tuberculosis."
 2. Clinical demonstration, showing how to detect early tuberculosis.
- (This session may be held simultaneously with one of the other sessions and will be arranged especially for physicians.)

The National Association has arranged for expert speakers to present various subjects and lead in the discussion. The officers of this second New England Tuberculosis Conference are as follows:—

PRESIDENT.

Dr. Stephen J. Maher, New Haven, Connecticut.

VICE PRESIDENTS.

Hon. Redfield Proctor, Proctor, Vermont.

Dr. Estes Nichols, Hebron, Maine.

Dr. Harry Lee Barnes, Wallum Lake, Rhode Island.

Dr. Edward O. Otis, Boston, Massachusetts.

Dr. John M. Wise, Glencliff, New Hampshire.

Dr. David R. Lyman, Wallingford, Connecticut.

SECRETARY.

Seymour H. Stone,

4 Joy Street, Boston, Massachusetts.

It is earnestly to be hoped that there will be a large attendance at this local New England Conference, as well as at all the others of the series, on the part not only of physicians but of all persons interested in public welfare work. Any communications or suggestions should be addressed to the local secretary, Mr. Stone, or to Mr. Philip P. Jacobs, the assistant secretary of the National Association.

PHYSICAL TYPES AND PROFESSIONAL EFFICIENCY.

As the leading article in the issue of the JOURNAL for March 4, 1915, (Vol. CLXXII, page 322) we presented the first of a projected series of papers by Dr. John Bryant of Boston, on the carnivorous and herbivorous types in man, and the possibility and clinical utility of their recognition. In his Shattuck Lecture before the Massachusetts Medical Society, published in the issue of the JOURNAL for June 17, 1915 (Vol. CLXXII, page 881), Dr. Joel E. Goldthwait, of this city, also selected for discussion certain other aspects of this important subject. In the present issue of the JOURNAL we take pleasure in publishing the second paper of Dr. Bryant's series, devoted to certain further

general considerations, especially with reference to the association of the various diatheses with the contrasted physical types, the evolutionary history of these types, their characteristics, and their practical relations to education, employment, insurance liability and liability to disease.

In his discussion of the relation between sex and physical type it seems that perhaps Dr. Bryant errs in suggesting that the herbivorous feminine type is more suited to child bearing than the carnivorous. As a matter of fact, we believe that the experience of obstetricians is to the contrary. It is true that the carnivorous type is probably liable to a wider variety of complications during pregnancy and parturition; yet, as a matter of experience, unaccountable dystocia seems more likely to arise in the presence of what would appear normal conditions among herbivores than among carnivores. The mere fact that on the whole the carnivorous type is outstripping the herbivorous is evidence that, under the existing conditions of civilization at any rate, nature is apparently slowly exterminating the herbivore in favor of the more easily prolific carnivore. To be sure, the increasing employment of Caesarean section offers a possibility of escape from the reproductive perils particularly affecting the herbivorous type, just as its universal adoption might ultimately affect the race as radically as did the assumption of the erect posture. Until this remote contingency, however, becomes operative, it seems that the herbivorous feminine type must, from the obstetric standpoint, be regarded as less successful and desirable of perpetuation than the carnivorous.

If an intelligent recognition and consideration of physical types be advantageous in the selection of right occupation for the individual, as Dr. Bryant suggests, it is obvious these tests must be applied with considerable special knowledge and discretion. As in all application of theories, generalization is dangerous. As a matter of fact, such recognition of type has already been applied, more or less unconsciously, by individuals for themselves and by others for them, as Dr. Bryant relates in the instance of the government service employees. Probably the selection of men for the manual and mechanical handicrafts might be more reliably made on the basis of physical type than for the professional and intellectual occupations. Such selection, however, has in the past been made with more or less rough accuracy on the basis

of phrenology, which, after all, is but a crude way of recognizing unconsciously by the head alone the physical type of the individual. For instance, it has been said that a round faced boy (that is to say, a herbivore) should be made a banker or business man, whereas a long faced boy (that is, a carnivore) should be trained as a lawyer, a physician or a teacher. Any method of selection for the professions, however, on the basis of physical type alone, is liable to overlook the important possibility, arising as a result of mixed heredity, that a human being of herbivorous type may have the kind of mind usually associated with the carnivore and vice versa. Instances of such mental and physical mixture occur with sufficient frequency to make it undesirable to apply the rule of physical type as a rule of thumb. Indeed it is doubtful if any rule should be so applied.

These observations are suggested not as contradictions, but by way of further comment on Dr. Bryant's interesting and important work. In his further study of the questions associated with the differentiation of human physical types he will be more particularly concerned with the relations of these types and of the diatheses based upon them to various clinical phenomena of medical importance in the recognition and treatment of disease. The possibility and utility of such recognition is probably even greater and presents as valuable opportunities in medical practice where physical conditions are chiefly concerned as in the determination of prospective professional efficiency in the individual.

THE DE-NARCOTIZATION OF TOBACCO.

In the issue of the JOURNAL for August 19, we commented editorially on the possibility of the de-alcoholization of beverages as a preventive of inebriety. It now appears that a similar project is in operation for the de-narcotization of tobacco by the removal of its nicotine to such an extent as to make it practically non-toxic without destroying its flavor or pleasant properties upon consumption. The experiments to this end have been performed during the past three years at the United States Agricultural Station in Landisville, Pennsylvania.* Instead of re-

* This work has been in charge of Dr. W. W. Garner of the United States Bureau of Plant Industry.

moving the nicotine from the grown leaf, however, the method adopted is a process of cultural selection. Three years ago a number of tobacco stocks were analyzed and found to have an average nicotine content of 3.5%. The seed from the plant having the lowest content was selected and this process repeated each year. Already the nicotine content has by this means been reduced to 1.3% and it seems conceivably possible by a continuation of the process to produce a strain of tobacco which should be practically free from nicotine and, therefore, non-toxic and harmless.

If this supposition be true, it would appear that the de-narcotization of tobacco may be as practicable a possibility as the de-alcoholization of vinous beverages,—processes, which, if really feasible, should make unnecessary reforms without which the higher progress of mankind could hardly be attained.

MEDICAL NOTES.

ONE HUNDRED AND FIFTY-EIGHT LIVES SAVED IN SPITE OF HOT WEATHER.—Despite the hot weather record, the death-rate in New York City for the week ending Aug. 21 was 1.42 per thousand lower than during the corresponding week of 1914. In other words had the death-rate of the corresponding week of 1914 prevailed during the past week there would have been 1480 deaths instead of 1322, a saving of 158 lives. The death-rate for the first week was 11.88 as compared with 13.30 for the week ending Aug. 15, 1914. The following causes of death showed a decrease, to wit: digestive diseases, heart disease, tuberculosis (other than pulmonary), Bright's disease, diseases of the nervous system and violence. During the past week 348 infants under one year died, exactly the same number that died during the corresponding week of last year; but when it is considered that there are a larger number of infants under one year in the present population, it is evident that a material reduction has been effected. The campaign against mortality is surely bearing fruit. Mothers are learning how to feed, how to dress and care for their infants during the warm weather. The deaths of children under five show a slight actual increase over last year. This is due to the greater prevalence this year of several of the contagious diseases. There is a material saving in the lives of persons over sixty-five, only 188 being reported from this group as against 231 last year. The death-rate for the first thirteen weeks of 1915 was 13.75 as compared to 14.19 for the corresponding period of 1914.

A FURTHER SAVING OF LIVES.—The death rate in New York for the week ending Aug. 22, was .63 lower than the death rate for the corresponding week of last year. This decrease amounts to a saving of seventy lives.

The total number of deaths was 1,366 with a rate of 12.27 against 1,381 deaths and a rate of 12.90 during the week ending August 22, 1914.

The deaths from sun-stroke were 75% fewer than during the third week of August of last year. The gospel of the summer hygiene is undoubtedly bearing fruit. The citizens of New York are not only learning to care for their infants properly, but likewise to care for themselves, to regulate their diet, to abstain from alcoholic drinks, to dress coolly and bathe often.

The only disease showing a noteworthy increase during the past week was typhoid fever. Six deaths more were attributed to this disease than during the corresponding week of last year and six more than during the previous week of this year.

The deaths of children under five years of age of diarrheal diseases showed a slight actual increase, but this is to be accounted for by the increased number of inhabitants in the city at this age.

Deaths from measles were fewer than during the corresponding week of last year—the first week since March 27 that the weekly death toll of this disease was lower than that recorded last year. Indeed, this decrease marks the end of the epidemic of measles that prevailed throughout the city since last winter.

The death rate for the first 34 weeks of 1915 was 13.68 as compared with a death rate of 14.16 for the corresponding period of last year.

FOOT AND MOUTH QUARANTINE.—Report from Washington, D.C., states that by an order of the Department of Agriculture, effective on August 30, the federal quarantine against foot and mouth disease was raised in Saginaw County, Michigan, Ford and Henry Counties, Illinois, and the entire state of Massachusetts. The quarantine at West Philadelphia is modified to permit the handling of cattle for export and the restricted areas are reduced in Indiana and Minnesota.

BUBONIC PLAGUE IN HAVANA.—On August 17, a case of bubonic plague was reported at Havana, Cuba, the first recorded since the outbreak in that city last winter.

TYPHOID IN BUFFALO.—Report from Buffalo, N. Y., states that, on Aug. 18, there were reported in that city 12 new cases of typhoid fever, the largest number ever recorded there in a single day.

PREVALENCE OF MENINGITIS, POLIOMYELITIS, SMALLPOX AND TYPHOID.—The weekly report of

the United States Public Health Service for August 20, 1915, states that during the month of July there were reported in Maryland ten cases of cerebrospinal meningitis, seventeen of poliomyelitis and 305 of typhoid fever. During the same period there were reported in Wisconsin six cases of meningitis, 60 of smallpox and 19 of typhoid.

SCARLET FEVER IN BELFAST.—During the spring and summer of 1915 there has been a prolonged epidemic in Belfast, Ireland, of scarlet fever, which has apparently become endemic in that city. Report on August third states that of 158 cases of infectious disease notified between June 20 and July 17, 131 were scarlet fever.

CANNING COMPOUNDS DANGEROUS TO HEALTH.—Information has come to the Department of Agriculture that the canning season has brought the usual demand on the part of housewives for salicylic and boric acid. These preparations are sometimes sold in the form of powder under various trade names and are recommended by the promoters for use in preserving canned goods in home canning. In the directions for use, the housewife is told to fill the jar with the fruit or vegetables, cover with water, and add a teaspoonful of the preserving powder. While it is true that these compounds may retard the decay of the fruit or vegetable, it is pointed out by the experts of the Department that their use may be attended by serious disturbances of health. Salicylic acid is well known as a poisonous substance, and one of the evils which may accompany its use is derangement of the digestion. It is, therefore, plain that its extensive use in food may lead to disturbance of digestion and health.

The Federal Food and Drugs Act prohibits the use of harmful preservatives in foods that enter interstate commerce. The food law of nearly every state in the union forbids the sale within the state of foods that have been preserved with harmful substances. Neither the federal or state food laws apply to foods that are canned in the home and consumed there. It would seem, however, that the housewife would not knowingly use, in the foods she provides for her family, substances that she could not use in foods for sale without violating the law, because these substances are injurious to health.

Fruits and vegetables can be kept indefinitely if they are sterilized by heat and properly sealed, and there is no excuse, in the opinion of the experts of the Department, for running any risk by using preserving powders, which may be injurious to health. The use of such powders in addition to the possible injury to health, encourages uncleanly or careless work in canning. Reliance is placed in the efficacy of the preserving compound instead of upon cleanliness and heat.

The Department has issued bulletins that give specific directions for the preserving and canning of fruits and vegetables without the use of preserving powders or canning compounds. These bulletins may be obtained without cost from the Department of Agriculture.

COMPLETION OF CINCINNATI HOSPITAL.—After about four years spent in construction, the new Cincinnati Hospital is ready for occupancy. It was planned by a special commission of physicians who arranged that it should incorporate all that is desirable in modern hospital building. Its total cost was about \$4,000,000. It occupies 65 acres of land and is made up of 45 wards containing 900 beds. The department of contagious diseases is a separate hospital, having its own wards and administration building. The spacious grounds have been utilized for tennis courts, baseball grounds and parks.

PANAMA-PACIFIC DENTAL CONGRESS.—On September 9, there came to a close the Panama-Pacific Dental Congress which has been in session since August 30, at San Francisco, with an attendance of 5,000 members from every state in the Union and 26 foreign countries. A total of 175 papers was presented at its meetings.

AMERICAN VETERINARY MEDICAL ASSOCIATION.—The fifty-first annual convention of the American Veterinary Medical Association was opened on August 30, at Oakland, Cal. The principal subject of discussion was the control of foot and mouth disease.

NATIONAL EDUCATIONAL ASSOCIATION.—On August 17, at the annual convention of the National Educational Association held in Oakland, California, a paper on "Child Welfare and Rural Schools," was presented by Dr. Thomas D. Wood of Columbia University, New York City, who pointed out that of the 20,000,000 school children of the United States about one-half are in attendance at rural schools. It is surprising that these children are less healthy and present more physical defects than city school children, including those of the slums.

"The rural school, from the standpoint of health and general fitness for its important use, is the worst type of building in the whole country, including not only all types of buildings used for human beings but also those used for livestock and all domestic animals. Rural schools are on the average less adequate for their use than prisons, asylums, almshouses, stables, dairies, barns, pigpens, chicken houses, dog kennels.

"Necessary provisions for the welfare of rural school children should include the following:

"(a) Sanitary and attractive schoolhouses and grounds.

"(b) Teachers better trained and better paid.

"(c) Health examinations, including dental inspection, once a year.

"(d) Health care in the schools including health instruction, warm school lunches, tooth brush drills and training in all health habits.

"(e) Correction of injurious physical defects by school doctors, health clinics, district nurses etc.

"(f) Coöperation of all available agencies for promotion of health and welfare of country school children."

ALLEGHANY GENERAL HOSPITAL.—It is announced that the children of the late William H. Singer of Pittsburg, Pa., will erect, equip and endow, in his memory, at a cost of \$400,000, a laboratory in connection with the Alleghany General Hospital for investigations into the origin of disease.

EUROPEAN WAR NOTES.

CHOLERA IN AUSTRIA.—Report from Zurich, Switzerland, by way of London, on August 24, states that on August 19, there were in Austria 1566 cases of Asiatic cholera.

A CASE OF CARDIAC SURGERY.—In a recent issue of the *Revue Scientifique* is described an unusual case of cardiac surgery reported before the French Academy of Medicine by Dr. Beausenat, an army surgeon. The patient, a sergeant in the French army, was struck on October 1, 1914, at Saint Hubert, in the Argonne, by a fragment of a hand grenade, which pierced the abdominal wall, diaphragm, pericardium, heart muscle, and lodged in the cavity of the right ventricle. The original wound healed, but the presence of the foreign body was revealed by x-ray. On February 17, 1915, the fragment was removed by direct incision through the cardiac wall. It was found free in the ventricular cavity, whence it was withdrawn with forceps. It measured $\frac{3}{8}$ x $\frac{1}{4}$ inch, and weighed 1.5 grams. Convalescence was complicated by angina, slight pyrexia and pleuritis; but the sergeant recovered and was returned to duty on March 17. This case is considered probably unique in the duration of time that the fragment remained in the heart.

THE STERILIZATION OF DRINKING WATER.—It is reported that Drs. Vincent and Gaillard of the Academy of Medicine, Paris, have, after repeated experiments, succeeded in perfecting a method whereby the drinking water of the French soldiers may be rendered free from pathogenic germs. A tablet of three to four milligrammes is made up of hypochlorite of lime and common salt in proportion of fifteen milligrammes of the former to eight centigrammes of the latter. This tablet is sufficient to sterilize one litre of water in fifteen minutes' time. In consideration of the difficulty of the army to provide safe drinking water for its soldiers under all circumstances, this convenient and simple method has much to commend it.

PESTILENCE IN BELLIGERENT COUNTRIES.—During the week ended July 17 one fatal case of typhus fever was reported at La Rochelle, France, and five cases of Asiatic cholera in Silesia, Germany. During the week ended June 12 seventy-five cases of cholera were reported in Moscow, Russia. One case of cholera occurred at Trieste, Austria, on August 7, and on August 11 one case at Livorno and three at Venice, Italy.

HONORS FOR DR. RYAN.—It is announced that Dr. Edward W. Ryan, of Scranton, Pa., chief of the American Red Cross at Belgrade, has been decorated by both the French and the Serbian governments for his work during the suppression of the recent typhus fever epidemic.

A PHYSICIAN'S GAS HELMET.—It is announced that Dr. Clukey McPherson, of Newfoundland, who went to Europe with the first contingent of volunteers from that island, has devised a new protective helmet for defense against poisonous gases. It consists of an ordinary Balaklava cap, of khaki, to which are attached a pair of celluloid goggles to guard the eyes, and a mouth pad saturated with a solution of soda and potash.

SUMMER WORK FOR FRENCH HOSPITALS.—The French Wounded Emergency Fund reports that since May the New England headquarters have helped 432 French hospitals containing 56,000 beds. Each week a shipment of surgical supplies has been shipped to England for the use of the smaller French hospitals. These cases contain surgical dressings among other things, great numbers of which have been made up at various summer resorts by vacationists. Branches are established at Islesford, Me., by Mrs. O. Y. Bowditch; Rockport, by Mrs. W. C. Rives; South Duxbury, by Miss Louise Coburn; Portland, Me., by Miss Irene H. Noyes; Round Pond, Me., by Mrs. William De Lancy Howe. Mrs. Howe has also formed a tentative organization in Friendship, Me. At Seal Harbor, Me., Mrs. William T. Sedgwick of Boston, and Mrs. Edward K. Dunham of New York, have been active in forming a committee of women to superintend the carrying on of the work. The sterilization of the bandages has been done at the Massachusetts General Hospital, Boston City Hospital, Peter Bent Brigham Hospital and the Homeopathic Hospital.

BELGIAN RED CROSS HOSPITAL.—In the issue of the *Lancet* for August 14, is a description of the Belgian Red Cross base hospital at Calais, established by Dr. De Page at the close of 1914 in the buildings of the Institut Jeanne d'Arc, under command of Captain Neumann of the surgical institute of Namur.

"From the Rue Champailleur a big *porte cochère* gives into a courtyard; directly on the left is the guard-room, with medical officers' quarters above, and on the right, where were formerly

the school teachers' quarters, the building has been transformed into an operating theatre, sterilization department, and instrument and bandage room, with the dispensary above. Beyond this courtyard in the grounds is the hospital, a long lofty building divided into wards holding from 7 to 12 beds each. On the ground floor are the wards for men and the dining room for the staff and nurses, these latter, it is interesting to note, being nearly all drawn from the British Red Cross Society. The first floor is taken up by an isolation ward and the officers' ward, while the floor above, one long vast *salle*, is given over to the convalescents who are waiting to be transferred to the South of France or to England. Annexed to the ground floor is the chapel, which has been transformed into a linen room; there is also an excellent radiographic and radioscopy installation."

A Ford motor ambulance has been presented to this hospital by Harvard University students.

WAR RELIEF FUNDS.—On September 4, the totals of the principal New England relief funds for the European war reached the following amounts:—

Belgian Fund	\$271,461.37
Polish Fund	50,222.55
Serbian Fund	36,624.55
French Fund	9,430.18
Italian Fund	2,603.10

BRITISH PRAISE FOR AMERICAN RED CROSS.—A report from the British Red Cross in Serbia, recently received and published by the London *Lancet*, speaks in high terms of praise of the work of the American Red Cross in that country.

"The work of the Americans already challenges comparison with what the British workers have done and it promises soon to outstrip us. An international sanitary commission, of which Sir Ralph Paget is chairman, has been established with headquarters at Nish. Under it the general medical and sanitary work of the country has been roughly apportioned between the different coöperating nations. France has charge of the northern half of the country and the United States of the south. Nish and its immediate neighborhood is under the Russians. The British have had the care of the army and most of the hospital work, except what the Serbians themselves are doing.

"This plan is working smoothly and well, but the share of the burden which the United States is bearing continually increases and will increase. Dr. Richard Strong, head of the American sanitary commission, is an exceptional man of wide experience and he has behind him the practically unlimited financial resources of the wonderful Rockefeller foundation.

"The United States, moreover, is the only nation which at the moment can spare an almost limitless supply of doctors. A party of 25 additional American doctors is expected shortly at Salonika. They are the advance guard of a

contingent of 150 or more. As they land they will be detached, singly and in twos and threes, to points all over Serbia where they are most needed.

"The typhus has now been reduced to such comparatively trivial proportions that one almost begins to speak of it in the past tense, although there will be many thousands of deaths from it yet. The total number during the winter and spring was well over 200,000.

"There are now 420 British doctors and nurses in Serbia. There have been no new wounded for some five months; typhus and typhoid have declined until they are no longer a serious public menace, and cholera, however anxiously awaited, has not yet arrived."

BOSTON AND NEW ENGLAND.

REOPENING OF BRIGHTON STOCKYARDS.—As a result of the raising of the federal quarantine for foot and mouth disease, noted in a preceding column of this issue of the JOURNAL, the stockyards at Brighton, Mass., were reopened on August 30 for the receipt and sale of cattle from Maine, New Hampshire, Vermont and Massachusetts.

NEEDS OF BOSTON FLOATING HOSPITAL.—On August 17, the Boston Floating Hospital issued an appeal to the public for \$20,000 urgently needed for the successful completion of its present season's work. On August 31, only \$9,549.58 of this sum had been subscribed. It is earnestly to be hoped that generous contributors may speedily make good this deficiency.

HOSPITAL BEQUESTS.—The will of the late Calantha E. Marsh of Boston, which was filed on August 31, in the Suffolk county registry of probate, contains bequests of \$1,000 each to the Massachusetts Homeopathic Hospital, the Kindergarten for the Blind, and the Industrial School for Crippled and Deformed Children.

PREVENTION OF MALARIA.—Professor Selskar M. Gunn of the State Department of Health, has issued a statement regarding the prevention of malaria, its prevalence, causes and proper precautionary measures to be taken. Because of the abundance of mosquitoes bred during the summer, malaria has been more than usually prevalent, seventy cases having been reported since the first of May. The statement continues with a description of the habits of the anopheles mosquito, methods of destroying its breeding places and the proper protection of houses by suitable screening. Daily doses of quinine taken during the malaria season, to prevent attacks of the disease, are urged.

FOXBOROUGH STATE HOSPITAL.—The recently published annual report of the Foxborough State Hospital records the separation of the patients and the removal, in June, 1914, of those

addicted to drugs, and inebriates, to the Norfolk State Hospital. In October, 1914, its new superintendent, Dr. Albert C. Thomas, assumed the administration of the hospital with Dr. George E. McPherson as first assistant physician. The number of patients remaining in the institution September 30, 1914, was 203. There had been 18 patients dismissed during the year.

ENTERIC FEVER FROM FRANKLIN PARK WATER.—It is reported that 12 cases of febrile enteric disturbance have recently occurred in this city among persons who, at a picnic, on July 25, drank water from a pool in Franklin Park. Investigation is being made by the Boston Health Department as to the nature and source of the probable infection.

TYPHOID FEVER IN PROVIDENCE.—Report from Providence, R.I., August 21, states that 35 cases of typhoid fever have recently occurred among residents of the Olneyville section of that city. All are among families supplied by two dealers whose milk is therefore believed to be the source of the infection.

INFECTION FROM SODA GLASSES.—In the effort to prevent possible spread of infection from unclean utensils at public soda fountains, the Boston Health Department has recently issued the following notice and regulation:—

"Proprietors of drug stores and other places where ice cream, college ices, etc., are sold are hereby notified that it is hereafter required that spoons, glasses or other utensils used in serving such ices be thoroughly cleansed and dried after each use."

Miscellany.

HEALTH TEMPLES IN ANCIENT GREECE.

THE subject of the health temples of ancient Greece is one of perennial interest which, at various times, has been dealt with in preceding issues of the JOURNAL. As a matter of fact the medical knowledge of Egypt preceded that of Greece, as did its civilization, but the records which remain of Egyptian medicine and medical worship are relatively fragmentary. It seems indubitable, however, that the early Greeks fully recognized their indebtedness to Egyptian methods and knowledge. It may be recalled that in the fourth book of *Odyssey*, when Helen mixes an opiate in the wine at the feast, reference is made to her having obtained knowledge of such drugs from the Egyptian princess Polydamna, wife of Thome. And of the Egyptians, Homer goes on to say (ll. 231-232):

ἰγρὸς δὲ ἑκαστος ἐπιστάμενος περὶ πάντων
ἀνθρώπων ἦ γὰρ Παιφονίος εἰσι γυνήλας

In a paper read before the section of history of medicine of the Royal Society of Medicine on December 17, 1913, and published in the issue of the *Lancet* for January 10, 1914, Dr. Richard Caton presented a careful study and description of several of the ancient Greek temples and of the ceremonial rites there practised. The first of these temples, that of Amynos, has been largely forgotten, and in Greek literature, indeed, is mentioned only in the writings of the Christian Eusebius. Amynos was an Athenian god of healing, whose cult has been discovered within a few years, his name being derived from the word ἀμύνω to ward off, to protect. At the time of Professor Dörpfeld's excavations at Athens in the region between the Areopagus and the Pnyx, there were exposed, among other relics, the ruins of the Amyneion, or temple of Amynos, an irregular area bounded by a wall with foundation of hard blue limestone and having at its eastern side a temple or chapel, in the center of which is an altar and sacred well. Many inscriptions were found here and an attempt has been made at a restoration of the precinct, grove and ancient temple.

"Its date is best judged by the pottery. Attic black figured, proto-Corinthian of 700 B.C., and lowest of all Greek geometrical pottery of 900 or 1000 B.C. were found. The temple at that date would have a stone foundation with walls of sun-dried brick covered with cement. The colonnade and pediment, if existing, must have been of wood, the columns formed of rough pine trunks. No stone drums of column nor any parts of a stone frieze have been found. Many inscriptions of later date were discovered. The cult of Asklepios came to Athens about 420 B.C. Inscriptions are mostly to Amynos and Asklepios, and sometimes to them and Dexion (Sophocles). Fragments of marble snakes are found, and numbers of remains of sculptured figures and ex-votos.

Asklepios seems to have been quite secondary to Amynos in the shrine, and up to Roman times Amynos holds his pre-eminence. Was incubation practised here? We have no information. A second foundation has been found which possibly was the wall of a shed for incubation. Nor is anything known about baths, drugs, or methods of treatment. But treatment seems to have been greatly valued, if we may judge from the inscriptions and ex-votos."

Another of the ancient Greek deities of healing was Amphiaraos, whose chief sanctuary was near Oropus in Attica. He had also subsidiary shrines at Rhamnus, Argos and Sparta. Dr. Caton describes his temple as follows:—

"In a pleasing glen, well clothed with pines, planes, and oleanders, through which a stream flows and in which many nightingales lift their voices, the shrine was built. Amphiaraos, a son

of Melampus or Apollo, was a prehistoric warrior and a hero, one of the Seven against Thebes and one of the Argonauts. When flying from his enemies the earth opened near Oropus and swallowed up Amphiaraos and his chariot. Why he should have become a great healing god it is hard to say.

"On the northwest of the stream on a flat strip of ground stand the remains of the sanctuary. Most to the west are the ruins of the Temple of Amphiaraos, a building 95 feet long and 43 wide, having a broad columned portico at the east end, six columns between antae. The cella had three aisles, separated by rows of columns. At the southwest end was apparently a small porch 8 feet by 5. A large square base stood near the centre of the cella, on which, no doubt, stood the great image of Amphiaraos—part of a colossal arm found was doubtless part of the figure—it was rather nearer the eastern end than the west. Probably the temple was not hypaethral, for if so rain would fall on the god; louvres more probably lighted the cella. In front of the temple stood a large altar 28 feet long and 14 broad, built of limestone. It was dedicated to several gods. Three long curved steps are seen on the north of the altar, on which no doubt worshippers stood or sat. The sacred spring rises a few feet south of the altar, and was used for special purposes only (not for washing hands nor for purification). Amphiaraos rose as a god from this spring—hence its sanctity. North of the temple and altar stood a large number of pedestals bearing statues.

"Northeast of the temple is a large stoa 360 feet long and about 36 wide. It has an open Doric colonnade of 49 columns on the southeast side, the other sides having solid walls. At each end is a chamber about 24 feet wide, and between them a long space of 310 feet (gratings in separation walls). A central line of 17 Ionic columns divided the stoa into two aisles. A marble bench ran along the back wall. The inner face of the wall was stuccoed and painted. Traces of painting still remain. This was the abaton, enkoimeterion or ward; the women occupied the western end, the men the eastern. Behind the colonnade, excavated from the hill side, is the theatre, with circular chorus space about 40 feet wide. The stage was about 40 feet by 20. Northeast of the abaton or ward is a series of bath-rooms, ten in number, dating from the third century B.C., but Roman alterations are evident. Two rooms have a hypocaust. Men and women had separate rooms.

"The inscriptions indicate that the sanctuary was founded at the end of the fifth century B.C., and that it was closed during winter. The priest was obliged to be present not less than ten days in each month and never to be absent more than three days at a time. The nakaros or sacristan was to attend regularly to his own duties. Any patient misbehaving might be fined five drachmas. On admission each patient paid a fee of not less than nine obols. The priest,

when present, must pray over the victims and put their flesh on the altar. The shoulder of every animal sacrificed, and in some cases both shoulders, were given to the priest, also the skin was ultimately his property. The patients might eat most of the flesh of the sacrificed animal, but no part of it might be taken beyond the precinct. The nakaros wrote down all the names and addresses of the sick. Before incubation each patient sacrificed a ram, and he used its skin as a bed, lying upon it in the abaton. Then incubation commenced, and he nightly awaited dreams and visions of the god.

"Whether or not any drugs were given, no one knows. A special diet with occasional abstinence was enjoined—fasting from all food for one day and from wine for two. No beans were allowed. When recovery took place the convalescent dropped gold or silver coin into the sacred well (which offering presumably was subsequently abstracted by the priest). Models in gold or silver of the diseased organ or limb were suspended in the temple near the figure of the god. Many gold and silver vessels and ornaments were given. There was a festival of the god every fourth year. That is all that is known.

"The shrine of Trophonios of Lebadea near Thebes had a lesser vogue for cure of the sick. The methods were somewhat the same: incubation and sleeping on the skin of a black ram."

The worship of Asklepios probably began to develop about 800 B.C., and extended from its original source at the Thessalian town of Tricca* to its great centers in Cos and Epidaurus. In the fifth century before Christ it had become established at Athens and Corinth; later it extended to Pergamon in Asia Minor, and finally, in 270 B.C., was brought to Rome and established there in a temple on an island in the Tiber. Dr. Caton describes as follows the great temple at Epidaurus in Argos near Athens:—

"The site of the Hieron was six miles inland from the town of Epidaurus. At the time of its greatness an extensive precinct occupied the beautiful valley extending from the hill Titthion, where Asklepios was suckled by a goat, to Kynortion, on which stood the Temple of the Maleatean Apollo. Here is a rough bird's-eye view of the precinct as seen from the south—a splendid array of temples, stoae, a great theatre, a stadium and grove. Here is the gateway with well for ceremonial purification, and the northern boundary wall. Here is the central temple of Asklepios, built in the fourth century B.C. The eastern facade presented a richly decorated and colored scheme. The eastern pediment represents a combat of Greeks and Amazons, the western a conflict with Centaurs—Victory on the apex, and Nereids as acroteria; an elaborate ivory door. A side view of the temple shows the works of art adjacent to it, and behind it a part

*Cf. Homer's *Τρίκλῃ δὲ ἱεροδόσω* (Iliad IV, 202).

of the abaton. A sketch of the interior shows the splendid gold and ivory figure of the god with a golden serpent and a temple dog. Chryselephantine sculpture is very beautiful; the ivory, however, tended to crack, as was found at Athens and Olympia. But this great figure of Asklepios never required to be moistened with oil or water, as did the others, for the god of physic we may presume knew how to preserve his own integument. Only the floor of this temple and fragments of its decorations remain.

"The abaton, or enkoimeterion, or hospital ward was employed probably half for men and half for women. On the south it has an open colonnade. So whatever other therapeutic agencies were employed there is no doubt that pure fresh air was enjoyed by the sick who occupied it. At the west end it was two stories in height. Here incubation took place, the sick awaited the personal aid of the god or of the serpents, or they hoped for dreams or visions guiding them as to the best treatment for their several ailments.

"Here is the Tholos or Thymele, an extraordinarily beautiful building of white marble colored in parts. It was the most splendid circular building ever erected by the Greeks, dating from the third century B.C., built by Polykleitos the Younger. It was Doric externally, Corinthian within. Within were two celebrated paintings, Methe (drunkenness) and Eros, suggesting the relation of Dionysos and Aphrodite to the ailments which afflict mankind. There are various opinions about the function of the Tholos. Some think it was the sacred well. The foundations are curious, a dark labyrinthine basement, which I think cannot have been a water-tank, because, first, it was not cemented and would never have held water; secondly, there is no spring nor conduit leading to it; thirdly, the word Thymele means a sacrificing place; and fourthly, Pausanias speaks of the Tholos and the sacred well as entirely distinct. I have little doubt that it was the home or lair of the sacred serpents; in the vaults beneath they dwelt and bred in numbers, and from here they were sent to the numerous asklepieia all over the ancient world. The snakes would ascend to the floor of the tholos, where bloodless sacrifices were offered to them, and where the sick gave them the honey cakes, popana, and other sacrificial delicacies they were fond of."

Of the ceremonial rites observed in these Greek medical temples, Dr. Caton presents an interesting discussion. Vast numbers of the sick came to them from all parts of the world and were presumably lodged in tents, except while they were receiving treatment, when they slept in the abaton. Thousands of well persons, however, came to these religious festivals merely for curiosity and enjoyment, like the throngs who go nowadays to such religious festivals as those of the Grotto at Lourdes, whose ceremonies and purposes are in many respects closely analogous to those of ancient Greece. Many

characteristic tales are narrated in connection with these occasions, of which but one must serve as an example. The story is told of Hermon, of Thesos, who was blind and came to Epidauros for cure.

"His sight was restored by Asklepios, but Hermon did not send the fees he had promised on his return home, so the god again made him blind. He came back to the hieron with the fees and was again cured. A man had an abscess in the abdomen. In a dream the god ordered his servants to hold him while he (Asklepios) opened the abdomen, cleared out the abscess, and sewed up the wound. When the patient awoke a great pool of blood was on the floor of the abaton, and he was cured. A great number of such inscriptions were fixed on the wall of the abaton.

"In later times superstition had a less share and science a greater one in the work of healing. We read of the priests using reasonable and useful methods of treatment: diet of a plain and simple kind, hot and cold baths, poultices, various medicaments such as hemlock juice, oxide of iron, hellebore, aquilla, lime-water, and drugs to allay pain, active gymnastic exercise, friction of the skin, and counter-irritation. Bleeding was practised, as shown in this vase-painting, and surgical methods were in use, for reliefs of surgical instruments exist."

Interesting contemporary records are preserved in literature of the functions and ceremonies practised in these Greek medical temples and of the sacrificial rituals employed. An excellent example of this type of literary composition may be found in "The Sacrifice to Asklepios," a mime of Herondas, a translation of which was published in the issue of the JOURNAL for January 9, 1913 (Vol. clxviii, p. 46).

THE HISTORY OF BLOOD-LETTING.

In the first Mellon lecture, delivered at Pittsburgh, Pa., on Feb. 27, 1915, and published in the issue of *Science* for July 30, Prof. John J. Abel sketches the history of blood-letting, in part as follows:—

"In the latter part of the twelfth century, when universities, as we now know them, were coming into existence, there originated in the School of Salerno the 'Regimen Sanitatis Salerni' or 'Code of Health,' a poem written in Latin hexameter verses and giving the medical notions of the day, as derived from the Arabic writers, in regard to blood-letting, diet and personal hygiene. The high value placed on the 'Regimen' may be seen from the fact that it passed through some 240 different editions and was translated into all the known languages. In general praise of blood letting the poem says

"Bleeding the body purges in disguise,
For it excites the nerves, improves the eyes
And mind, and gives the bowels exercise,
Brings sleep, clear thoughts, and sadness drives
away,
And hearing, strength and voice augments each day."

"Other verses give directions as to what months are proper and what are improper for bleeding, tells what diseases are benefited by blood-letting and in what quantities blood should be drawn, and the effect of age and other circumstances.

"Acute disease, or only so in part,
Demands blood-letting freely from the start.
In middle age, bleed largely without fear,
But treat old age like tender childhood here."

"In the sixteenth and seventeenth centuries there were heated controversies between advocates of the Hippocratic method of letting blood near the diseased part, and those of the Arabian method of opening a remote vein. Among the former was Pierre Brissot (1478-1522) of Paris, and among the latter Leonardo Botallo, a Piedmontese, an eminent practitioner of his time, chief physician to Charles IX, advising venesection to the limit, regardless of the nature of disease, the age or condition of the patient. Blood-lettings of three to four pounds each, repeated as often as four or five times, were advised, says Haeser, and this historian adds that the explanation of this 'Vampirism' is probably to be found in the circumstance that Botallo lived in Northern Italy, where diseases of an inflammatory character were prevalent, and more especially that in his experience as an army surgeon he encountered only patients of the most robust type. Botallo, in defending his practise said,

"The more foul water is drawn from a well, the more good water can flow in to replace it."

"An ardent follower of Botallo was Riolan the younger, who falls back upon Hippocrates and Galen and lays down the rule that one must take away as much blood as possible in every disease. As an adult is judged to have about thirty (!) pounds of blood, the tapping of half this amount, or fifteen pounds, in the course of fourteen days would be about the right amount to take, says Riolan. Guy Patin (1602-1672), himself an ardent bleeder and purger, informs us that Boiard, body physician of Louis XIII, bled that monarch forty-seven times, gave him 312 clysters and prescribed emetics and purges, 215 times, all in one year.

"A little later, that able and credulous Belgian mystic and follower of Paracelsus, J. B. Van Helmont (1578-1644), an iconoclast in general, called by his admirer Haeser 'The fist of the seventeenth century,' went so far as to condemn venesection entirely."

Franciscus de la Boë (1614-1672) of Leyden advocated moderation in venesection. In the chapter of his "New Idea" (translated by Rich-

ard Gower, of London, in 1675) on the motion of the blood through the lungs, he says:—

"A *Plethora of Blood* is soon and safely cur'd, by a sufficient Emptying of it by opening a Vein; whether it be together and at once, or by repeated turns, according to the peculiar nature and strength of the Sick. For there are many who cannot bear to have much taken away together, but soon fall into a Swourning; by which feeling none can at any time receive any good, I had rather that it should be prevented, as often as may be, and every Cure be done securely rather than rashly, seeing it often happens to those rash Blood-Letters, that they educe Life together with Blood."

"An instance of lavish blood-letting in a medical crisis may be found in the experience of that adventurous spirit, Thomas Dover, to whom we owe the much used 'Dover's powder.' In 1708, Dover, then forty-eight years old, set out on a privateering expedition, and was given command of a ship, the *Duke*, while his superior, Captain Woodes-Rogers, took command of the other ship of the squadron, the *Duchess*. The three years' voyage of these buccaneers is of interest historically because,

"touching at the island of Juan Fernandez, they took on board Alaxander Selkirk, who had lived alone on the island for four years and four months, and whose story was to develop in the skillful hands of Defoe into that of the immortal 'Robinson Crusoe.'"

"In Dover's 'Ancient Physician's Legacy to His Country' we find the following interesting passages:—

"When I took by Storm the two Cities of Guaiacuil, under the Line, in the South Seas, it happen'd, that not long before, the Plague had raged amongst them. For our better Security, therefore, and keeping our People together, we lay in their churches, and likewise brought thither the Plunder of the Cities.

"In a very few days after we got on board, one of the Surgeons came to me, to acquaint me, that several of my men were taken after a violent Manner, with that Languor of Spirits, that they were not able to move. I immediately went among them, and, to my great Surprise, soon discerned what was the Matter. In less than Forty-eight Hours we had in our several ships, one Hundred and eighty Men in this miserable condition.

"I order'd the Surgeons, to bleed them in both Arms, and to go round to them all, with Command to leave them bleeding till all were blooded, and then come and tie them up in their Turns. Thus they lay bleeding and fainting, so long, that I could not conceive they lost less than an hundred Ounces each Man.

"If we had lost so great a Number of our People, the poor Remains must infallibly have perished."

"We had on board Oil and Spirit of Vitriol sufficient, which I caused to be mixed with Water

to the Acidity of a Lemon, and made them drink very freely of it; so that notwithstanding we had one hundred and eighty odd down in this most fatal Distemper, yet we lost no more than seven or eight; and even these owed their Deaths to the strong Liquors which their Mess-Mates procured for them. . . Now if we had had Recourse to Alexipharmicks, such as Venice Treacle, Diacordium, Mithridate, and such-like good-for-nothing Compositions, or the most celebrated Gascoin's Powder, or Bezoar, I make no Question at all, considering the heat of the Climate, but we had lost every Man.'

"Of non-medical literature the Satire of Gil Blas, written early in the eighteenth century, but in reality giving a picture of seventeenth-century excesses in blood-letting, is worth citing.

"Dr. Sangrado is called in to prescribe for a gouty old canon, and he at once sends for a surgeon and orders him to 'take six good porringers of blood in order to supply the need of perspiration.' The surgeon was ordered to return in three hours and take as much more, and to repeat the evacuation the next day. The patient was 'reduced to death's door in less than two days,' and, the notary being summoned to make the will, seized his hat and cloak in a hurry, when he learned from the messenger, Gil Blas, that Dr. Sangrado was the physician. 'Zooks,' cried he, 'let us make haste, for the doctor is so expeditious that he seldom gives the patient time to send for notaries; that man has choused me out of a great many jobs.'

"But the misuse of bleeding continued in the centuries following, and at no time was the practise more abused than in the latter part of the eighteenth or even in the first five decades of the past century. French and Italian authorities, especially, were great believers in blood-letting. Broussias (1772-1832) is said to have used 100,000 leeches in his hospital wards in one year. This physician and his follower, Bouilland, actuated by false theories of the causes of fevers, recommended the bleeding of a patient 10 to 12 and even 20 times in the course of treatment."

Correspondence.

PARIS LETTER.

BRIEF IS THE MEMORY OF THE EARTH!

(From Our Special Correspondent.)

PARIS, July 17, 1915.

Mr. Editor: I went out a short time ago to see a portion of the ground over which was fought the battle of the Marne, and I must confess that the experience was a good deal of a disillusion to me. That the memory of man is short, has in all likelihood been a proverb ever since the world has been inhabited; but that the memory of the earth was equally transitory, came to me as a considerable shock.

Between Vareddes and Meaux, about 50 kilometers due east from Paris, the Marne makes a huge loop to the South, the region between the two places being a

high, rolling plateau; this point formed the angle that the German centre made with their flank which was being driven in by the army under Maunoury which General Joffre had assembled, unbeknown to the enemy, behind the screen of the Paris defences. General Joffre's strategy at this period was really admirable. In the early encounters of the war the French were pretty badly hustled about,—there is no gainsaying that fact; but then, instead of letting everything go to pieces, this wonderful man conceived the idea of his stupendous but thoroughly-reasoned-out retreat which drew the foe into a species of lobster's claw, one point being Paris and the other Verdun, from which he only barely escaped when the two branches began to close in. There can be no doubt that when this feat has been thoroughly examined, and the circumstances are well taken into consideration, General Joffre's strategy under such very serious conditions will go down in history as one of the great accomplishments of the art of war.

Poor Maunoury, by the way, was later on the victim of one of the most extraordinary accidents of the war: he and a brother general were one day looking through a loophole at a perfectly quiet point of the trenches when they were both shot through the head by a single bullet, he losing one eye outright, and, it is apprehended, the sight of the other,—his colleague being wounded in the forehead. The latter has now entirely recovered and has resumed his duties again.

Leaving Meaux the carriage takes you up an interminable hill in order to reach the high plateau, and once there you have the classical, fertile French landscape in its deep-green spring verdure; waving crops, half grown; dense masses of trees; bright, white, poplar-bordered *chausées* leading off to villages here and there,—it is all smiling, prosperous and peaceful, the scene you have admired scores and scores of times in this beautiful, well cultivated land. Here is a farm partly burned down; but any fire could do as much as that. That church over at Barcy looks a bit earthquakey; but it is too far off to distinguish details as yet. The grain is about knee-high, and all the fields seem to be in full cultivation; how about the entire manhood being away under arms! This the battle of the Marne? Evidently some more of our preconceived ideas will need readjusting.

I may as well tell the patient reader who has been able to get through my war-strategy, and description of landscapes, that if anyone here advises him to go and visit the battlefield of the Marne he had better merely stay in town and take his coffee at the Café de la Paix, for all the battle-field he will see. At two places the little white crosses that mark the temporary resting-places of the dead are sadly plentiful; but when you have seen one cross you have seen them all. The Barcy church is badly battered, the village walls are closely pitted with rifle shots, the cemetery at Chambry has a line of loopholes above its long row of new-made graves,—and that is about all! Eight months ago history was being written on this plateau with a broad and generous hand. From what I have said, and shall say in a moment, it is clear that in those early days of September, when we in Paris had that peculiar sensation of emptiness about our solar plexus and were dropping our weight at the rate of a pound a day (I have now collected quite a number of instances of men who simply melted in Paris during that strain, from sheer apprehension!), the general conditions upon this high ground back of Meaux were very far from conducive to longevity. But kindly Nature has intervened, and has drawn her soft mantle of green over the whole of it; and by next spring the honored dead will all have been exhumed and transferred to their proper resting places, the walls will then have been replastered, and the poor Barcy church probably rebuilt. What will there remain by that time to speak to the passer-by of this struggle of giants? Not much,—but still something; a reminiscence that will last a long, long while.

One of the most striking object-lessons in the New

York Museum of Natural History is a section of a big sequoia tree, well over a thousand years old, as I remember it, on which the annual rings are marked with little flags indicating that when the tree was that large such and such an event occurred: the birth of Mahomet, the conquest of England, the discovery of America. Well, strange to say,—outside of the church burial-places, it will be the trees of the *chasseurs* from Meaux to Varedes that alone will bear witness to this battle in the times to come. Up on the brow of that hill, at the highest point, the road is bordered on either side by a row of unusually fine trees of from one to two feet in diameter,—really big trees. This must have been a particularly hot corner during the fight, for all of these trees are riddled; and not with bullets,—a bullet would hardly show on a tree, it only shows on a plaster wall because it splits off a large flake,—but with shell. Some missiles took out a big piece from the tree-side, others went smack through, while still others carried away an entire branch or even cut the tree-stem clean off! But the trees are growing once more, cheerfully, and as though nothing had happened, and will for many a long year to come give evidence to the younger generations, as they walk out there Sunday afternoons, of the deeds of their fathers during the great war. All the same, it is rather startling to think that that is all that will remain of this terrific struggle! Wounds must heal, both physical and mental, otherwise life would be intolerable; but it is rather a shock, to see them heal as quickly as this!

Speaking of the graves of the fallen, brings me to another remarkable feature of this war, the extraordinarily high ratio between killed and wounded,—something quite unprecedented. When the papers were reporting the British casualties at Neuve-Chapelle, I was horrified to see that among the thousand odd officer casualties there were 350 killed, over one-third, and this did not include the missing, among whom there must have been still more killed. I thought that an explanation of the fact might lie in the circumstances that the British officer is an absolutely reckless creature, who always starts off well ahead of his men, and seems to consider that his special rôle in life is to get himself picked off by the enemy's sharpshooters. This, by the way, is a point that will certainly have to be changed in future wars; it is as clear as day that a country that wishes to keep any officers at all for further use will have to devise some other way for them to direct their men than the present one, which is nothing less than a thinly disguised form of *hara-kiri*.

The French have never published any collective casualty-lists; but a while ago, quite a time back, I saw what looked like an authoritative estimate, giving 400,000 killed and 750,000 wounded,—almost the exact ratio of the officer-casualties above cited! Quite recently, only a few days ago, Mr. Asquith reported in the House of Commons the British casualties to date, in which the same awful ratio appears,—in round numbers: officers, killed 3,300, wounded 6,500, missing 1,100;* men, killed 47,000, wounded 147,000. The ratio for the men is not quite so high, nearer one-quarter than one-third; but it should be noticed that there are reported in addition 52,900 men missing, a very large part of whom are certainly killed, as the Germans do not claim half that number of British soldier-prisoners. These figures are certainly new in warfare, and bear fearful testimony to the efficacy of modern weapons. And if this is the ratio among the Allies, who fight in extended formation and with a steady view to economy of life, what must the figures be among the Germans, who, especially during the early stages of the war, were absolutely reckless in their expenditure of men!

In connection with the curious accident whereby two generals were put out of action by a single bullet, let me mention another very peculiar occurrence of this

war. It was reported in the daily press, with regiment, name, place and hospital, and has every appearance of truth. A soldier, Boissay by name, entered the ambulance for a fracture of the left leg and wounds of the right. X-ray examination revealed in the latter round bodies that were taken for shrapnel bullets, but that were found on extraction to be *three twenty-franc gold pieces*, or Napoleons, as they are familiarly known. Now the strange part of the tale is that the patient was a poor man, who had not even a bowing acquaintance with such a *grand seigneur* as a Napoleon! The three coins must, therefore, have been blown out of some comrade's pocket into the wounded man's leg!

"S."

AMERICAN RED CROSS IN SERBIA.

SKOBLJI, SERBIA, July 10, 1915.

Mr. Editor: I suppose that an account of the conditions in Serbia would be of special interest to your readers, but I am in no position to treat the subject adequately, nor would it be proper for a member of the American Red Cross Commission to attempt this without the aid and approval of its Director, Dr. Strong. Therefore, I wish to have it clearly understood that what follows are personal impressions and views subject to correction.

The epidemic of typhus in Skoblji seems to have been at its height in January or February and to have diminished rapidly during the month of April, so that when we arrived here in May comparatively few new cases were entering the Lady Paget Hospital which had been reserved for fevers, and for typhus in particular. This hospital was staffed by British and supported by the British Serbian Relief Fund. The members of the staff kindly allowed several of us to join in the work, and to live at their hospital in order that we might begin to study typhus without delay, and had it not been for this hospital, we should have lost much time in getting settled.

They told me that they had begun work in one of the Serbian hospitals which had been a school, and had later moved into their present quarters, the Cadet Barracks, situated most beautifully in the midst of rolling pastures in the valley of the Vada, a mile above the town. They had found terrible conditions in the stables where Austrian prisoners were quartered hard by, and several of their hospital-staff had contracted typhus by going into these buildings to remove the sick and the bodies of the dead. Lady Paget took the disease in the same way.

The mortality among these prisoners seems to have been frightful at first and was due, probably, in great measure to lack of hospital care, or indeed care of any sort. After the hospital got running well and had an adequate staff of nurses the number of cases of typhus which entered began to diminish, although patients were being sent from all the neighboring towns and villages, and finally began to come from far distant places.

We had not been many days at the hospital when the last large lot arrived. They had been collected and brought to Skoblji by a sanitary train, and some of them lived nearly as far away as Belgrade. Having been sorted by the Serbian doctors in the town, those destined for the Paget Hospital began to arrive by carriage-loads in the afternoon. There were carriages, carriages, and still more carriages until the ground around the wash-house was covered with emaciated, unkempt humanity. The "boinctchers", or Austrian orderlies, got busy with the dippers, tied the clothes into bundles, and lead the tottering patients into the wash room where they were duly scrubbed. Meanwhile brandy was given, where they lay, to the weakest, and it seemed as if some would die before they could be cared for. Then, skinny figures, clad in night-shirts, began walking across the grass barefooted to the ward buildings, and stretchers also were seen, but there was no confusion and no excitement.

* A writer in the *Lancet* makes the proportion of killed to losses among officers work out as high as 43.61 per cent.

Eighty patients were taken into the hospital that afternoon with perfect ease. However, 120 had been expected and the beds were ready of course.

Half of the new patients went into my wards where I looked them over, prescribed hastily on general principles, and singled out the sicker patients for special attention. It was several days before all had been examined completely. If you think you can diagnose typhus by the facies, try it under such circumstances. I diagnosed it freely only to find later that several of my supposed typhus cases had relapsing fever.

In Serbia there are "three typhuses", typhus exanthematicus or "pegaril-typhus," typhus recurrens, and typhus abdominalis, and in the recent epidemic here there has been a considerable percentage of recurrens, as has so often been the case in other epidemics of typhus fever. I have seen very few cases of typhoid fever, but among the patients sent to the Paget Hospital as "typhus" there has been a certain proportion of tuberculois in its various forms, some malaria, a little diphtheria, and, recently, a large number of typhus suspects have been admitted for a disease afterwards designated "influenza," or "dogs' disease," and which may have been potatist fever.

At the present writing there is little typhus anywhere in Serbia so far as I can learn, and that which persists is confined to a few localities.

G. C. S.

A NAUTICAL REMEDY FOR HICCOUGH.

DARK HARBOR, ME., Aug. 26, 1915.

Mr. Editor: In "Ancient Remedies for Hiccough," JOURNAL of Aug. 26, I note the omission of a remedy which I have heard was at one time considered sovereign by sailors: to wit, to spit tobacco juice on the testicles of the sufferer.

Yours truly,

F. C. SHATTUCK.

BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION FOR THE WEEK ENDING AUGUST 28, 1915.

CONTRIBUTIONS.

Warren County Medical Association, Vicksburg, Miss. \$10.00

Receipts for the week ending August 28. \$10.00
Previously reported receipts. 7804.84

Total receipts. \$7814.84
Previously reported disbursements:
1625 standard boxes of food @ \$2.20. \$3575.00
1274 standard boxes of food @ \$2.30. 2930.20
353 standard boxes of food @ \$2.28. 804.84

Total disbursements. \$7310.04

Balance \$ 504.80

F. F. SIMPSON, M.D., Treasurer,
7048 Jenkins Arcade Bldg.,
Pittsburg, Pa.

NOTICE.

Until further notice the voice clinic of the Boston Psychopathic Hospital will be open daily except Monday from 3 to 5 P.M., for charity cases of all the phases of speech defects.

WALTER B. SWIFT, M.D.

SOCIETY NOTICES.

AMERICAN SOCIAL HYGIENE ASSOCIATION.—The annual meeting of The American Social Hygiene Association will be held in Boston, Massachusetts, October 8, 1915. In connection with it there will be public meetings in the afternoon and evening, the latter to be held jointly with the Massachusetts Society for Social Hygiene. Details of the program are not yet completed but will be announced soon.

JAMES H. FOSTER, Assistant Secretary.

NEW YORK AND NEW ENGLAND ASSOCIATION RAILWAY SURGEONS.—The twenty-fifth annual session of the New York and New England Association Railway Surgeons, celebrating the quarter century anniversary of the organization of the association, will be held at Hotel Astor, New York City, October 21, 1915, under the presidency of Dr. W. H. Marcy, of Buffalo, N. Y.

A very interesting and attractive program has been arranged. Railway surgeons, attorneys and officials, and all members of the medical profession are cordially invited to attend.

GEORGE CHAFFET, M.D., Corresponding Secretary,
338 47th Street, Brooklyn, N. Y.

AMERICAN ELECTRO-THERAPEUTIC ASSOCIATION.—The twenty-fifth annual meeting of the Association will be held at Atlantic City, September 14, 15 and 16, 1915, with headquarters at the Hotel Chalfonte.

All physicians interested in physical therapeutics are invited to attend.

J. WILLARD TRAVELL, M.D., Secretary.

APPOINTMENTS.

UNIVERSITY OF NEBRASKA.—Dr. Oscar Theodore Schultz, formerly assistant professor of pathology in Western Reserve University, has been appointed professor of pathology and bacteriology in the University of Nebraska.

UNIVERSITY OF PITTSBURGH.—Dr. John Jenkins Buchanan has been appointed emeritus professor of surgery and Dr. Robert Tabbutt Miller professor of surgery in charge of the department.

Dr. P. H. Roemer, director of the Institute of Hygiene at the University of Greifswald, has been appointed to succeed Professor Fraenken at the University of Halle.

RECENT DEATHS.

DR. THOMAS F. AIKEN, who died in Boston on Aug. 16, was born at Oswego, N. Y. He received the degree of M.D. from the University of Pennsylvania in 1894, and after practising his profession for a time in Philadelphia removed and settled in Boston. He is survived by his widow.

DR. N. W. WILSON of Buffalo, N. Y., died on Aug. 30, of cardiac disease, in New York City. He was formerly a resident Rutherford, N. Y., and after having engaged for a time in journalistic work he studied medicine at the Buffalo Medical College. He was a practitioner in Buffalo at the time of the Pan-American Exposition in that city, and was the first physician summoned to attend President McKinley when the latter was assassinated there.

DR. MARTIN BERNARD ROEDT, of Lynn, Mass., a Fellow of The Massachusetts Medical Society, and of the American Medical Association, died at the Lynn Hospital, Aug. 12, following an operation for appendicitis, aged 29 years. He was a graduate of the Baltimore Medical College in 1906.